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The THERAPEUTIC GAZETTE

INCORPORATING

MEDICINE AND THE MEDICAL AGE

A Monthly Journal of

Practical Therapeutics

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MEDICINE AND THE MEDICAL AGE

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ORIGINAL COMMUNICATIONS.

ON THE COMPLETE CONTROL OF EPILEPTIC SEIZURES BY LUMINAL—TECHNIQUE OF ADMINISTRATION.

BY FRANCIS X. DERCUM, M.D.,

Professor of Nervous and Mental Diseases, Jefferson Medical College of Philadelphia.

The treatment of epilepsy has ever been most discouraging and disheartening. The relief obtained by the bromides is commonly very incomplete, while the objections to their prolonged administration are so well known as to need no comment, and are indeed often of such a character as to lead many physicians to reject them altogether. At the same time epilepsy is so grave a disease, one which unfits the sufferer for any serious pursuit in life, and which ever places him on the brink of an abyss of uncertainty and danger, that any method of treatment which promises success must receive our welcome consideration. I am prompted therefore to place my own rather remarkable experience, now extending over several years, before the profession.

My attention was first directed to the value of luminal in disturbed and excited states by an article in the *Journal of Mental Science,* July, 1914, by Dr. Richard Eager of the Devon County Asylum, at Exminster, England. It occurred to me to make a trial of the drug in epilepsy, and I have done so with the most gratifying results. At first I gave the drug in divided doses three times daily as in the common administration of the bromides. I found, however, that, used in this manner, it sometimes made the patient a little heavy during the day and at times even a little dizzy. I found that if I limited the administration of the drug to one dose at bedtime, these symptoms did not appear, while the efficiency of the drug was in no wise impaired, if indeed it was not enhanced. I found that in epilepsies, even when most confirmed, the drug exercised a remarkable control over the seizures. The latter were usually promptly inhibited altogether. The doses required were exceedingly small. A grain and one-half of luminal or two grains of luminal sodium given at bedtime were ordinarily sufficient. Very rarely have I been obliged to give so large a dose as three grains.

In a number of instances the use of luminal as here indicated has resulted in the abolition of the convulsive seizures for periods extending not only over many months, but even over several years. It was in the group of the "essential" or "morphologic" epilepsies that the efficacy of the drug proved most remarkable. Indeed, in some of the cases the luminal acted virtually as a specific. It is noteworthy, too, that at no time was the slightest deleterious or untoward effect noted. Respiration, circulation, temperature are uninfluenced—even by the most prolonged administration—nor is there any induction of a drug habit or craving, for the action of the remedy is unattended by either pleasurable or disagreeable sensation. The smallness of the dose required to control the seizures is especially noteworthy, as the dose of luminal used as a hypnotic is from five to ten or more grains.

I have found that in some cases luminal did not at once control the seizures, but that not infrequently it had to be given for some time—*i.e.*, a week or two—before its full action was established. I found further that if I gave small doses of bromides three times daily for a brief period at the time of beginning the administration of the luminal, the action of the latter was established more promptly, and that at the end of ten days or two weeks the bromide could be withdrawn entirely, while the seizures would be completely inhibited by the further administration of the luminal. I naturally noted also that if the patient were placed under simple and physiological methods of living, the results were achieved more promptly. I therefore give the usual and necessary instructions: first, in regard to diet, namely, the diminution in the amount of red meats and carbohydrates and the avoidance of stimulants of all kinds (coffee, tea, etc.); and secondly, in regard to keeping open the various avenues of elimination, bowels, kidneys, and skin. Quite commonly I prescribe a laxative water to be taken in moderate doses on rising in the morning, direct the patient to practice daily tepid sponge bathing, bathing in the tub being for obvious reasons forbidden, and also instruct him to drink freely of water between meals.

I then prescribe, on the average, twenty grains of sodium bromide to be taken three times daily after meals, and also, and most important of all, a dose of luminal of one and a half grains, to be taken at bedtime. As a rule the disappearance of the epileptic seizures is almost immediate, and in the course of a few days the dose of the bromide is reduced to one-half and finally discontinued altogether. The luminal is continued uninterruptedly. In many instances the luminal has thus been given over many months and in a few instances over a period extending over one, two, and even more years. No untoward symptoms have ever been observed by me—nothing, indeed, save the cessation of the attacks.

I should add that during the brief period of bromide administration I always institute chloride of sodium withdrawal, and also that I invariably use sodium bromide in preference to the other bromides; there is reason to believe that during sodium chloride withdrawal, sodium bromide replaces the latter in the tissues.

While one would expect the efficacy of luminal to be greatest in morphological, *i.e.*, so-called idiopathic, epilepsy, it is also efficacious in epilepsies of other origin. For example, in a case of focal epilepsy, a child of three years, in which cessation of the attacks followed trephining, exposure of arm center, and removal of button of bone, the seizures recurred after an interval of sixteen years. They were now promptly controlled by a small evening dose of luminal.

In some of my patients in whom either through a misunderstanding or through carelessness the luminal was discontinued for an interval, the seizures did not recur. It is of course too much to hope that luminal should bring about a permanent cure so that its administration might no longer be necessary; however, it is not impossible that the "epileptic habit" or tendency to seizures may be profoundly influenced by their complete suppression for a time.

Finally, a word should be said as to the absence of any deleterious influence of the luminal upon the mental life of the patient. No such effects have been noted by me. On the contrary, one of my patients, a confirmed epileptic youth, has, through the complete cessation of his attacks, been able to carry on most successfully a course in a college preparatory school.

The questions naturally arise, What is luminal? and How does it act? Luminal is a member of the group of drugs to which adalin, barbital, and barbital sodium belong. It was first, and until recently solely, made in Germany. It was not a drug much used in this country, and as a hypnotic is very inferior to barbital or barbital sodium. During the period of the war it was obtained with great difficulty, and many times, of course, not at all. Recently, however, it

has been made in this country, and a letter addressed to the American chemists at present manufacturing it has elicited the following statement, viz.: "That luminal is closely related to barbital chemically, one of the ethyl groups of the latter being substituted by a phenyl group, so that it is therefore 'phenylethylmalonylurea.'" How luminal acts it is, of course, impossible to say, but it is exceedingly probable that it has a specific action on the cortical motor neurones.

CANCER OF THE UTERUS.

BY HOWARD A. KELLY, M.D.,
Professor of Gynecology in Johns Hopkins University, Baltimore.

THE RESPONSIBILITY OF THE GENERAL PRACTITIONER IN CANCER OF THE UTERUS.

I want to say a few words to the general practitioners regarding their responsibility in cases of cancer of the uterus.

The subject is important, for cancer of the uterus, with cancer of the breast and cancer of the stomach, is one of the commonest forms of the most dreadful and distressing of all the long list of maladies which come to break the thread of life when it is about half spun, and when the poor disillusioned victim is anticipating an evening of rest after a life of toil.

It is also important because most of these cases are first seen by the general practitioner, whose timely advice and insistence upon immediate and early intervention is capable of saving many lives year by year.

Two very different forms and opposite types of cancer occur in the uterus, according as the body or the neck of the organ is affected.

When the neck is involved the form of the cancer seen under the microscope is usually that of the flat epithelium which springs from the vaginal portion of the cervix. When the body is the seat of the disease the form is that of a gland cancer, and the microscopic picture is that of the normal glands of the cavity of the womb growing riotously. I will show some pictures of these forms later on.

Let us look first at the early symptoms of cancer of the womb, then at the methods of making a diagnosis, and finally let us consider the best methods of treatment, as well as the new impulse given to this matter by the growing use of radium as a boon and a curative agent in this field. The distinction between cancer of the body or fundus of the uterus and that of the cervix is such a radical one from every standpoint that I proceed to deal with body cancer at once, in order to devote separate and particular attention to it, and then to consider cancer of the cervix also by itself alone.

The great cardinal warning symptom of all cancers of the mucous membranes of the inferior parts of the body is that of hemorrhage.

Let me therefore lay down a law for the guidance of us of the medical fraternity more imperative than the laws of the Medes and Persians, namely, that every woman who complains of a profuse or an irregular discharge, in other words of a uterine hemorrhage in some form, be it large or small, continuous or intermittent, demands investigation, and must be kept under observation until the source of the hemorrhage is traced, and a clear diagnosis is made. In an unmarried woman under thirty, the element of time may enter into the diagnosis, and if the hemorrhage has not been serious or protracted, and is not repeated, rest may be tried for a short time, especially if nothing abnormal can be felt by abdominal or rectal examination.

In such a case, if it becomes urgent to examine the lower genital tract, one can do this by putting the patient in the knee-chest posture and using a small speculum, one of my number ten bladder specula—that is, one which is ten millimeters in diameter. This can even be inserted in a little child

without rupturing the hymen. Through this the vagina and the cervix can be seen perfectly.

In any other case a complete examination must be made in the following manner in order to trace the hemorrhage to its source:

A general investigation must exclude any

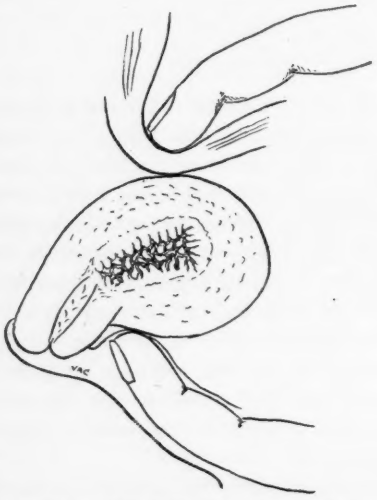


FIG. 1.—Cancer of the body of the enlarged uterus. Bimanual palpation of the uterus. The upper hand is pushing in the abdominal wall while the lower pushes up the anterior vaginal wall; in this way the body of the large uterus is grasped and its size easily appreciated. Add to this anteroposterior pressure a rolling of the uterus from side to side.

serious dyscrasia likely to give rise to a hemorrhage, such as a blood disease, tuberculosis, and heart trouble. In other words, we must first make sure that the flow is caused by something localized in the pelvis, and then go to work intensively on the pelvis to find out what the trouble is.

A careful abdominal palpation shows that there is no large tumor there to account for it. Then a digital examination of the vagina, using one hand, acting in coöperation through the abdomen, shows that there is no palpable disease of the cervix of the womb, and that there is no disease of the structures lateral to the uterus. This latter part is best decided by the fact that no lumpiness or hardness is felt on either side of the cervix, and that there is no marked tenderness there, and further that the uterus can be readily bobbed up and down by the finger, or, as often described in the history sheet, "the uterus is freely movable."

Perhaps, as is often the case in cancer of the uterine body, the note is made that the uterus is "somewhat" or is "decidedly" enlarged (Fig. 1).

My investigation now limits itself to determining just what is in the uterus, and to just what its enlargement is due. There are only two ways of doing this: one is to note carefully by touch the shape and contour of the womb in the manner just described; when if it is nodular and irregular in all probability a fibroid tumor is causing the trouble. Here, however, a word of caution, for cancer of the body is also sometimes irregular and nodular.

The other, and the one finally conclusive, way is to put the patient under gas anesthesia and to dilate and curette the womb, and then to have the curettages examined by a competent pathologist.

ENDOMETRITIS A RARE DISEASE.

The pathologist may report either "endometritis," which as a rule means nothing,

FIG. 2.—Normal uterine mucosa showing the gland orifices with their sharp line of demarcation and the abundant matrix or stroma in which they lie; also the sharp, thin line of demarcation of the epithelium lining the cavity of the womb, which lies below and contains some epithelial débris.

or "hyperplasia of the uterine glands," which means just as little, or rather, often means that the curettage has been made before a menstrual period when the mucosa

is more abundant. Rarely he may find tuberculosis of the endometrium, but that is so rare without obvious lateral masses that you may almost forget it. A common surprise is to learn that the remnants of an old abortion have been lingering to cause all the trouble, which is at once relieved by the thorough curettage.

If the report comes in that there is no disease, or that there is only hyperplasia, and you are dealing with a case of marked anemia and persistent hemorrhages, in a woman of thirty-eight years or over, and especially if the uterus is enlarged, you may put it down as a case of "functional hemorrhage," as we used to call it, or in reality a case of disease of the muscular and vascular tissues of the uterus—that is to say, of the myometrium. These cases are all curable by radium, and as a rule by a single application. Twenty years ago I considered it a reproach to our specialty that there was no other remedy but the removal of these hemorrhagic uteri, but that reproach is at

FIG. 3.—Adenocarcinoma of the body of the uterus, showing the disappearance of the matrix or stroma and the enormous overgrowth of the glands simply crowded together in irregular masses. The open spaces are the lumina surrounded by the irregular, rapidly growing gland epithelium. The magnification here is greater.

last lifted, now that we are able to bring on a menopause without the mutilating hysterectomy, and by a procedure closely imitating nature's own way. Let me repeat so important a matter: the diagnosis of this hemorrhagic affection of the uterus, called sometimes "myometritis," is rather made by the exclusion of other causes.

CANCER OF THE BODY OF THE UTERUS.

I show here two microphotographs, one of a normal uterine mucosa (Fig. 2) and the other of a cancerous body of the uterus Fig. 3). The extraordinary difference is

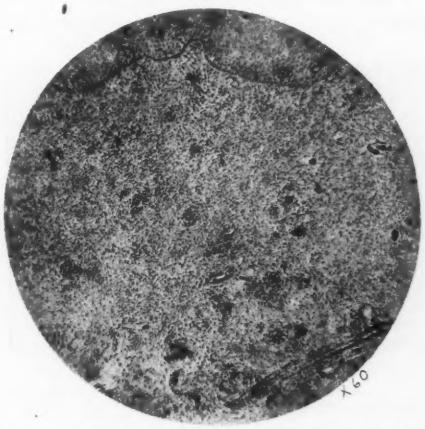


FIG. 4.—Normal cervical epithelium above with its sharp, wavy line of dark-colored basal cells. Tissue below this made up of fibrous tissue and blood-vessels. Note remarkable contrast between this and the next picture, where these same epithelial cells are invading the underlying tissues.

apparent at the first glance, even without any knowledge of pathology whatever. In the normal the little islets of the glands are distributed here and there through the abundant stroma, while in the diseased tissue the crowded glands occupy almost all the space, and the stroma intervening is almost obliterated. This is the most striking change; there are others in the epithelium lining the glands and its nuclei, which it is aside from our purpose to dwell upon here.

The hemorrhages in cancer of the uterine body are apt to be protracted, and the disease runs a course longer, I believe, than any other malignant growth at any other point in the body, without dissemination into the remoter tissues. It may remain localized for five years or even much longer, but while this is the rule there are unfortunately exceptions, so that it never does to delay operating once the diagnosis is made.

The proper treatment is operation, the thorough removal of the entire diseased organ. Where this is impossible on account of the condition of the patient, whether due to age or complicating ailments, radium may be used with a prospect of relief.

CANCER OF THE NECK OF THE WOMB.

Cancer of the cervix (Figs. 4 and 5) presents a totally different picture from every

FIG. 5.—Cancer of the cervix, showing the enormous overgrowth, the epithelium in the dark cells extending down into the tissues.

standpoint, and the contrast could hardly be greater than that between a cervical growth which springs up like a mushroom and spreads rapidly in every direction (Fig. 6), and one in the uterine body adjacent, which by comparison seems often to progress almost like a geologic age.

A cervical growth does not spread up into the body of the uterus above, but, respecting that territory, advances in one of five other directions, either (*a*) it stuffs out the whole cervix itself to form a mass filling the vagina, often a most favorable form in spite of its evil appearance; or (*b*) it spreads down over and infiltrates the vagina, as a rule under the bladder; or (*c* and *d*) it involves one or other of the broad ligaments, where it feels hard and unyielding, pulling the cervix to the affected side (this is felt best through the rectum) (Fig. 7); (*e*) an extension posteriorly over the rectum is not so common.

In well-advanced cases the whole vaginal vault seems hard and frozen. If we could look inside the abdomen in such a case we would see the disease covering the pelvic floor, fixing the cervix immobile in the center, and extending out over the sciatic nerve roots, accounting for the terrible uncontrollable sciatic pains, and spreading up into the abdomen by a chain of glands running up over the brim of the pelvis. Looking again narrowly at the pelvic brim we see the swollen ureters, the evidence of a serious interference with the urinary function, which is one of the merciful painless ways of terminating life. Let me interpolate here the remark that no case of sciatica in a woman, or indeed in a man, is thoroughly diagnosed until the possibility of a malignant disease pressing on the nerve roots in the pelvis is excluded.

Fortunately in not all of these cases does the disease leap, as it were, out into glands at once, as we have been inclined to imagine heretofore. The extension is often simply directly into the contiguous tissues; this important fact I have verified in a number of instances.

Practically all the cervix cancers occur

FIG. 6.—Large cauliflower cancer of the cervix filling the upper vagina. The finger is palpating the right fornix to see if there is any resistance or thickening there. These cases are a sort of a surgical paradox, for although the disease is so extensive they are often hopeful.

in women who have borne children; among the curious exceptions to this rule are several with cervices torn by a dilatation for dysmenorrhea or sterility. I first saw one of these about 1886, when Dr. T. A. Emmet had also noted one with the same history. This fact leads us back evidently at once

to trauma as the prime cause of cervical cancer.

The responsibility of the general practitioner in this group of cases is that of an early recognition of the disease, and in securing a prompt operation. I might, without fear of challenge, lay down the general rule that every cancer of the uterus, as well as every cancer of the breast, is curable if seen and taken early. But as a matter of fact we are lucky if we find that 20 per cent of our cases are good risks as to recurrence. I do not say 20 per cent operable, for operability and liability to recurrence are unfortunately two different concepts. I shall revert to this later on.

Oppressed by the terrors of this disease,

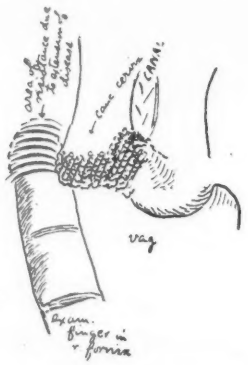


FIG. 7.—The disease here, though apparently limited, has extended into the base of the right broad ligament, where the index finger is palpating it.

I still feel strongly inclined to urge, as I did many years ago, that every woman who has borne a child shall be examined from time to time, say after the age of thirty-five, to determine just what her condition is, and above all in the effort to catch any malignancy in its earliest stages. Let us now proceed with the examination, in quest of a possible cancer of the cervix (Figs. 8 and 9). First of all the touch examination, where it is important to put on a thin rubber glove to protect the hand from contamination; if the doctor who omits this precaution attends obstetric cases or does any surgical work at all, he is liable to contaminate his next patients with the intensely virulent germs swarming in any breaking-down cancer case, for no ordinary hand scrubbing will bring about asepsis and take this risk away completely. The patient is brought to the edge of the table with flexed thighs, and the index-finger is introduced, the condition of

FIG. 8.—A nodule on the cervix which is elevated, red, and looks suspicious. This ought to be investigated by cutting out a piece and examining it under the microscope. In this case it was not malignant.

the vagina noted, and the cervix located. A normal cervix is about the size of half a hickory nut with a smooth vaginal surface, and a small round orifice or at the most a small transverse slit. If the cervical glands are choked and enlarged and the cervix is infiltrated, it feels thicker than usual, and perhaps a little nodular, but always smooth, and firm, and does not bleed easily.

The next step is to outline the uterus and determine its size and the position of its fundus, and its mobility. To the right and to the left of the cervix the bases of the broad ligaments ought to feel free, soft, and yielding. There ought not to be any stony hardness or wall of resistance there. A cancer on the other hand sometimes feels like a spongy mass, sprouting down into the vagina, or again like a craterous ulcer, with irregular surface and ragged edges; the

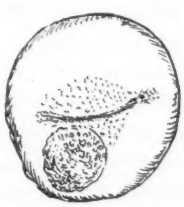


FIG. 9.—A very early cancer of the cervix; a small round elevated nodule on the posterior lip which bleeds easily on handling. Unfortunately the disease is rarely seen in this early stage, when it is practically always curable.

hardness and infiltration often extend down the vagina, or out into and infiltrating the base of one of the broad ligaments. Slight or profuse bleeding often follows "the

touch," as it was called 150 years ago, and a little scraping movement of the finger often detaches bits of tissue valuable for the pathologist. In the more advanced cases the uterus is solidly fixed on one or both sides; in a less advanced stage the thickening is better described as definite but leathery and flexible. No investigation is complete where cancer is suspected until a rectal examination is made, for the lateral, usually one-sided, extensions are here felt most distinctly, and can be traced further away from the cervix center; here also the involvement of the uterosacral ligaments can best be felt. The need of wearing a glove is all the more apparent in making the rectal examination.

It is not enough to feel the disease even though the evidence is indisputable; the coöperation of sight also is a necessary factor in the diagnosis. The next step therefore is the specular examination. Now as to the best way to do this, each man has his own method to which he may be wedded by years of practice, but let me describe my own way and routine, for I believe it is good and furnishes a clear demonstration. After the finger examination just described, all the while making a few notes as I proceed, I next take up a Nelson trivalve speculum (see Fig. 13), lubricate and introduce it up to the vaginal vault and spread its valves so as to bring the whole of the cervix in the field. A cancerous cervix appears utterly different from a normal one; it may look like a vegetating mass, spongy and bleeding, or it may form an ulcerated, easily bleeding cavity at the vaginal vault with the hard, congested, thickened margins of the cervix eaten into by the disease. In the breaking-down stage there is often a foul-smelling discharge, and blood and pus fill the interstices of the granular area. Any touching with an instrument causes it to bleed, sometimes so profusely as to require a firm pack to check it.

The condition most likely to be mistaken for cancer by one who is not a specialist is a lacerated, thickened, everted, secreting cervix, pouring out a glairy mucus from its diseased glands, often due to gonorrhea. The distinguishing marks are that this is smooth, never really ulcerated, and while red and angry looking it is not friable and does not bleed freely on touch. It is always best, however, to err on the safe side in such an important matter and hold under suspicion any cervix of which you are not certain, and when a doubt persists seek more expert advice. I am glad to say that I have continually to congratulate doctor friends for their extreme care in this respect. If all were equally easily alarmed many lives would be saved, for it is better to suspect five cases unnecessarily than to miss one malignant one.

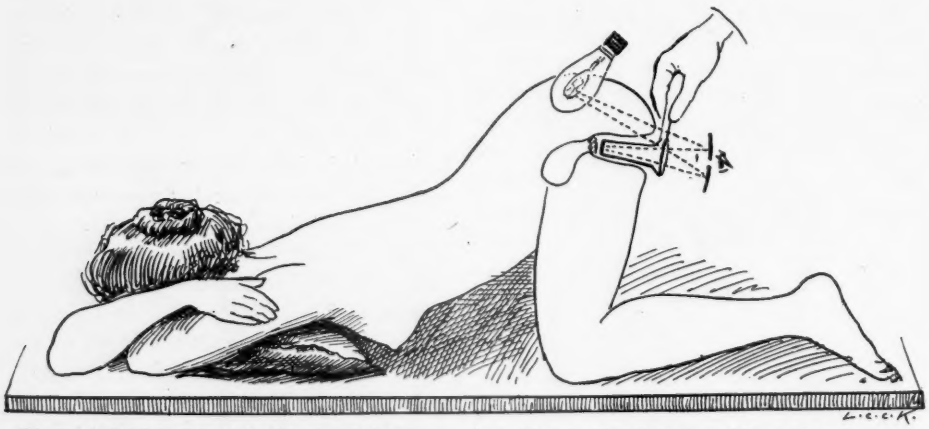


FIG. 10.—A sketch to show posture in using the tubular speculum with a stout handle, to inspect the cervix and vagina.

I would like to dwell on the advantages of still another method of examining the vagina, the cervix and the vaginal vault before dismissing this matter of ocular inspection (Figs. 10, 11, 12). I refer to a knee-chest posture investigation, more used three decades ago than now. I get the most satisfactory exposure of any in the following way: The patient gets on her hands and knees first, "on all fours," and is then told, while keeping her hips as high as possible, to drop her face down to the level of the table and turn it to one side. It requires a little adjustment to get the face right and the elbows spread out at the sides away from the body, and perhaps the back bowed in; the thighs are kept vertical and are not drawn up under the body. In a multipara in this posture the vagina balloons out of its own accord. A speculum, a Sims often, is introduced, and with a reflected light the whole vagina with the cervix is seen as clear as day. I think many men would like this posture better if my conical speculum with a stout handle were more used. It is one of a set of specula I first devised for the rectum, but it is simply perfect for the vagina too (see Fig. 13). The method of using it can be seen so well from the photograph that no further description is needed. The next step, which ought rarely to be omitted, is to take a piece of tissue and put it at once into a bottle containing formaline (10 per cent) duly labeled, to be sent for a pathological examination. This can be done either with an ordinary uterine curette or with a curved scissors, or with some sort of a biting instrument (see Fig. 14). The tissues are so friable that it is almost always easy to secure the specimen without giving the slightest pain to the patient.

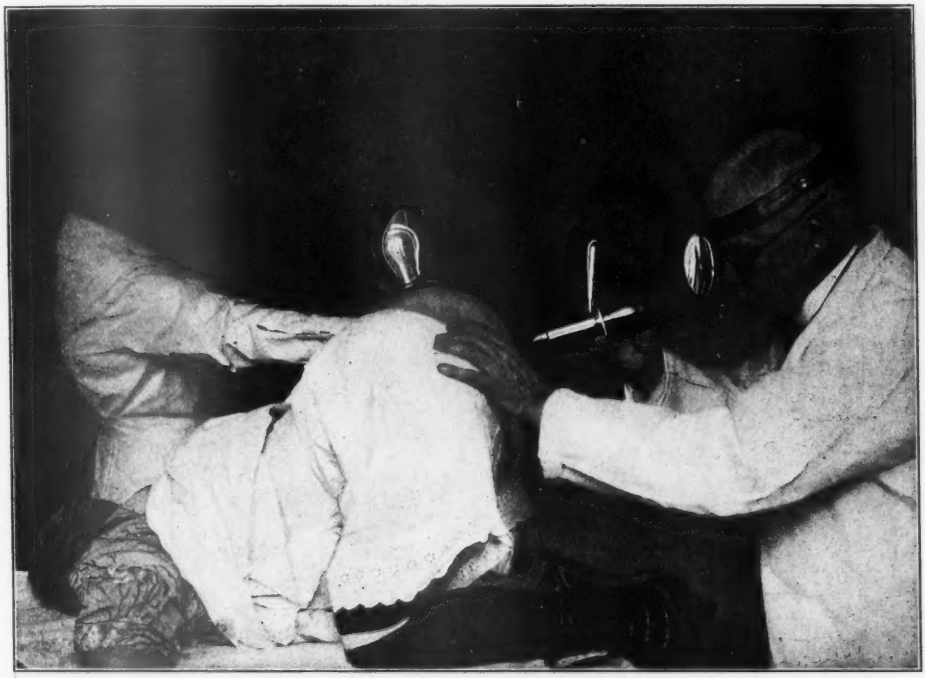


FIG. 11.—Patient in ideal knee-chest posture, electric light held over sacrum by nurse. Physician about to introduce the conical metal vaginal speculum. Showing method of holding speculum.

A word to the wise is said to be sufficient: here are several hints from the pages of my personal experience. Don't get your specimens mixed. Immediate transfer to the formaline bottle at the time of the opera-

tion (during the operation), and by the operator himself, into a bottle duly labeled, before he rises from his seat, take care of that danger. Again be sure your pathologist is a responsible, careful man. While I was a student in the University of Pennsylvania in the late seventies and on into the eighties, we had a teacher in pathology who was lamentably and notably careless about this vital matter, invalidating all his diagnoses in doubtful cases.

Once, some twenty years ago, when I was waiting for a pathological laboratory report, a telephone message was taken down at my private hospital, from the Johns Hopkins, as diagnosis "adenocarcinoma," when the true message was that the patient "had no carcinoma!" Leave off the "h" and the two are hard to distinguish.

If the pathologist reports that it is malignant then the question at once comes up as to the best course to pursue, and what treatment to recommend, in order if possible to extirpate the disease.

There are three alternatives: (1) Let the case alone and let the disease continue its course, until after two or three years of great suffering and invalidism, and constant use of increasing doses of opiates, death comes as a welcome release to patient and family; (2) the use of radium to eliminate the disease; (3) to use surgery, removing the uterus, its appendages, and much of the surrounding tissues—the so-called "radical operation."

The first course is unthinkable if there is any real chance of relief. Of the two remaining courses, radium or surgery, I unhesitatingly put radium first wherever it is available in sufficient quantity to be really effective. The obvious advantages of radium are that it incurs no risk of life or mutilation and that it covers a larger field than surgery, in taking care of cases in which the knife can offer no hope. Radium covers the whole field of cancer of the cervix, while surgery reaches but a fraction of the field.

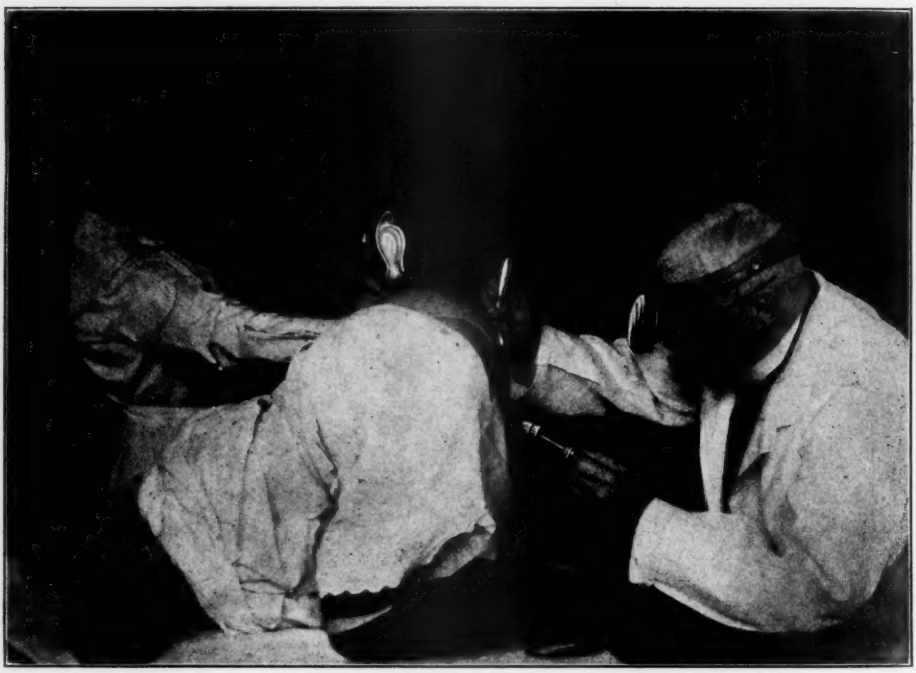


FIG. 12.—Speculum introduced. Inspecting the vagina and the cervix by the reflected light.

Surgery has now held the field for a generation, and we are pretty well aware what its limitations are. If your patient is approaching an operation you can estimate her chances in this way: In inexperienced hands there is always a vivid danger that the operation itself will prove fatal; also if she survives there is a chance that affected tissues have been left behind to speed a recurrence. By inexperienced hands I do not mean any young man who essays to do an operation, but rather one who has grown tired of the trammels of internal medicine and aspires to step out into a surgical practice without special training under a master in a hospital; on the other hand, the young man who has had his two or three years of intensive training under a first-class surgeon, and has had operative experience of his own under supervision, is equipped often to do the very best work at the start in the field of private work. Even in experienced hands the operative mortality is still high, and if the patient survives the ordeal there is an operative morbidity to be dreaded, namely, suppuration in the wound, and above all the sloughing of one of the ureters with a fistula, and lastly a rapid recurrence, either in the vaginal vault or in the tissues lateral to the vagina.

Now what are the chances in a given case in good hands? That depends upon the extent of the disease, which can be determined with a fair degree of accuracy by the vaginal examination.

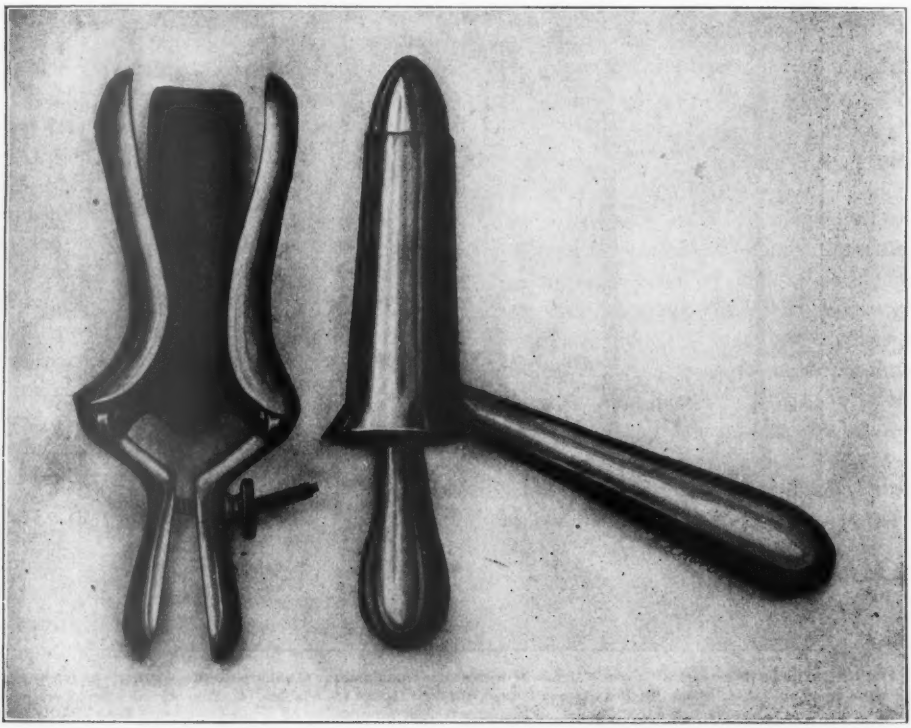


FIG. 18.—The two specula which, along with Sims' speculum, are the most useful to the gynecologist. The one on the left is a Nelson trivalve, the best one I know for the examination in the usual dorsal position. The one on the right is my own metal tubular speculum with a stout handle, occasionally useful in making applications in the dorsal position, but intended for use in the knee-chest posture, when it gives a beautiful exposure of all parts of the vagina.

In estimating a patient's chance I use the following rule: If the disease is wholly limited to the cervix as far as I can determine, and the uterus is still freely movable, then she has a splendid chance not only of immediate recovery, but also of remaining well indefinitely. Unfortunately

this group is small. If the disease has extended but a little into the tissues lateral to the uterus, where it causes an evident thickening, sometimes felt only through the rectum, then recurrence is the almost invariable rule, and that within a few months. When there is fixation of the cervix, or any definite mass on either side of it, also always best felt through the rectum, then the case is never a proper one for operation at all; this constitutes the largest group seen in all our clinics.

The field of the operation then is still limited to but a small group, and it may be said that all our propagandist efforts so far have not really touched the great cancer question, in view of its immensity. We have worked, and worked very successfully, to bring relief to a small body of sufferers, but the vast army still goes on to the grave after a few years of narcotized sufferings.

Radium, a new agent of relief, has come within the past ten years to dispute this entire territory with surgery. Let us consider what it will do, and try to decide which is best, or whether perchance each has a well-defined field of its own.

I begin with the worst group, the more or less massive disease, utterly inoperable, but still limited to the pelvis. (I exclude from all consideration those who are about to tumble into their graves within a few weeks.) In this inoperable group of massive cancerous infiltration, radium in sufficient quantity, applied in the vagina, often works a marvelous improvement, reducing the disease until it seems sometimes that it must all disappear. Chiefly, however, here its use is to relieve pain and to give back the sufferer to her family in better health for a period of a few months or longer. If it accomplished nothing else the palliative effects of radium in this class are invaluable.

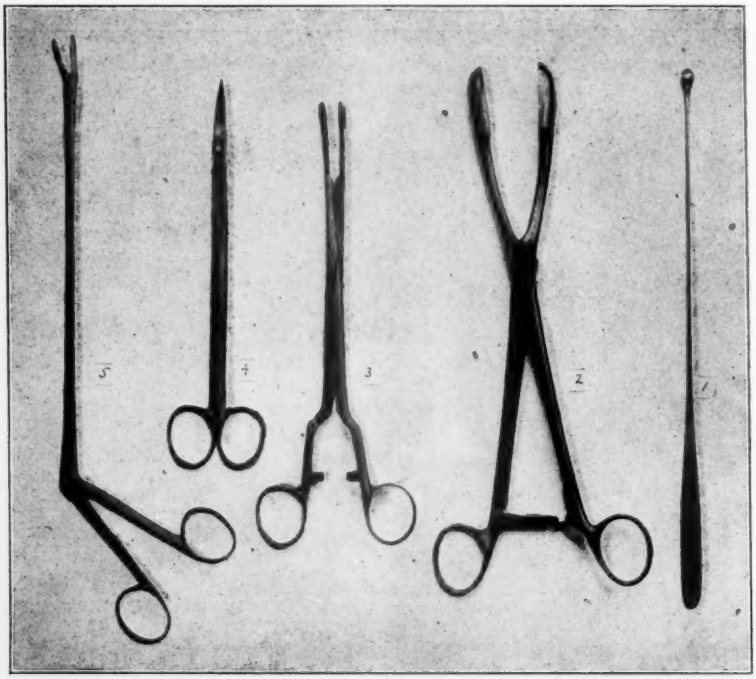


FIG. 14.—Instruments for removing bits of tissue for microscopic examination: (1) Sharp curette. (2) Large biting forceps or clipping off a piece of tissue. (3) Renal stone forceps will do if tissues are friable. (4) Fine curved scissors are very useful sometimes in securing a piece of tissue. (5) Alligator forceps for nibbling off a piece of tissue; these can be used through the open cystoscope also in the bladder.

Here and there in a series of cases one is relieved permanently against expectation. In this sad field, therefore, radium reigns supreme.

In the cases in which the disease has gone into the broad ligament, but is not massive and still leaves some mobility to the cervix, in which the patient may be described as operable, but in which experience shows that the disease always returns, and generally at once, here radium scores a fairly large number of successes, and is also supreme, in that surgery only gives illusory relief, to contrast with the permanent results of radium.

Finally, we come to moot ground, and that is the question whether it is best to use radium or to extirpate the uterus surgically in a case in which we have every reason to believe that the disease if removed by the knife will never come back. Let me put the argument for radium in this group; if radium will cure or profoundly modify the more advanced cases just described, by so much the more will it wipe out the disease in these earlier cases. And as demonstrated by experience with radium as with surgery, the earlier the case is seen the better the result. There is this also to be said in behalf of radium, namely, that the treatment given does not confine itself to the manifestly diseased cervix, but penetrates out into the broad ligaments, eliminating there any microscopic elements, and in this way offering a larger percentage of permanent cures. With the very best surgery there are recurrences from time to time in this favorable group. Now against radium we must put this: our experience is not yet large enough for an absolute decision, also the inconvenience that the patient needs to be kept under interval observations, to nip in the bud any tendency to a recurrence. If my patient were going away to some far distant point and could not be watched, and I had to choose between the two, I would still prefer surgery, as I would be acting in accord with general custom and with the sanction of the profession at large. But better still in such a case would be the extirpation of the uterus, followed during convalescence by the radiation of all the tissues at the vaginal vault. Perhaps this is after all the best compromise, while we continue to look toward the future in the fairly confident expectation that the time is near at hand when operations will be abandoned altogether in this class of cases. My expert friend, Dr. J. G. Clark of Philadelphia, already seems willing to take this pioneer position.

The conclusion of the whole matter, then, is this:

All bleeding uteri ought to be investigated in older, or married, or child-bearing women, by making a direct examination of the pelvic organs by touch, and by visual inspection, often with curettage.

The physician who will avail himself of all his opportunities to examine as carefully as he can will soon be able to decide in almost every case whether there is cancer or not, even though he does not pose as a specialist. The use of the trivalve speculum in the dorsal and the tubular in the knee-breast position gives a perfect idea of the condition of the cervix uteri.

If the cause of the bleeding is not found there, then the use of a curette to remove a little of the uterine mucosa is indicated, where pregnancy is excluded with certainty.

The general practitioner in justice to his patient, as well as to himself, must cultivate the friendship of some reliable pathologist who will do team work with him in pronouncing authoritatively upon the tissues sent him; in this way many lives now being lost will be saved.

In all cases of cancer radium holds the first place as a curative remedy *par excellence,* far superior to surgery or to any other means at our disposal. Radium is also the best palliative as well as radical remedy, for enough years have now elapsed to enable us to speak of the permanency of its results, even though many important questions still remain to be worked out.

FURTHER PROGRESS IN THE TREATMENT OF MINOR CHRONIC LESIONS OF THE SKIN SURFACE.[1]

BY WILLIAM NEILL, JR., M.D., BALTIMORE, MARYLAND.

In January, 1913, there appeared in the *West Virginia State Medical Journal*, Vol. VII, No. 7, an article written by me, treating of the imperative need of an early recognition of cancer, and the education of the public toward that end. This important subject, which had been neglected in previous years, was taken up soon afterwards on a grand scale, and many articles written in the lay magazines, with Dr. T. S. Cullen at the head. This immense propaganda was carried on by a national society to educate the public generally to be on guard at all times for this dreaded affliction. This great work has been the means of saving many lives, and the people at large now know what cancer is.

In my article, aside from the general warning, more particular attention was given to skin lesions or precancerous lesions, and the treatment generally accepted at that time. This consisted of complete excision with the knife or actual cautery. The *x*-ray, CO_2 snow, liquid air, Paquelin cautery, electric needle, and the different caustic pastes, had all been considered as unsafe. Radium, of which little was generally known, had not been widely used with satisfaction.

We all now agree that localized irritative skin lesions demand prompt attention. Happily, as a result of the propaganda started in 1913, the layman realizes the importance of this, just as he does that of acute appendicitis, or strangulated hernia. It is the exception now to see the huge carcinomata that were so common in the past, except occasionally in a case coming from an isolated rural district, where the patient through ignorance has neglected to consult his family physician in time.

Since that date my experience has brought me more and more in touch with radium therapy, and I have come to take a more advanced view-point concerning the treatment of skin lesions, especially those of the face. There is a large group of skin epitheliomata which arise in the cells of the hair follicles, and are spoken of as basal-celled epitheliomata, that are best treated by radium. Radium does not destroy tissue, leave a scar, disfigure, cause keloids, nor raise the question whether sufficient marginal tissue has been removed. The treatment is painless, without risk, there is no loss of time from work, and recurrence is rare, as has been proven through the treatment of hundreds of patients at the Howard A. Kelly Sanatorium during the past ten years. All of the cases treated for cancer must be kept under observation, just as when surgery has been chosen.

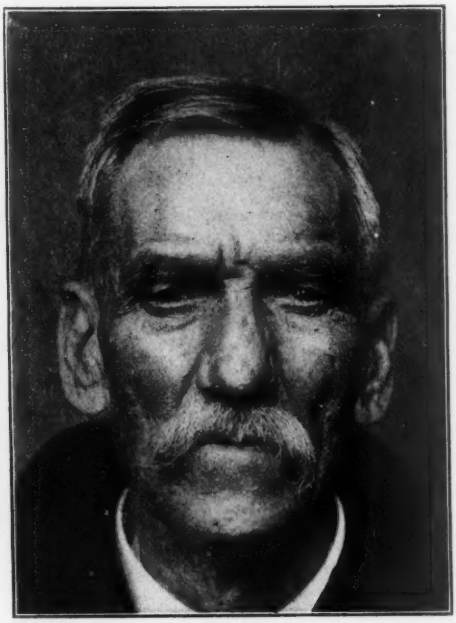
Radium is the ideal treatment of all such lesions about the eyes, nose, and ears, as a surgical removal frequently causes marked disfigurement. For instance, to remove surgically a lesion from one of the eyelids, or one situated in the region of either of the canthi (Fig. 1), would be impossible without causing lasting deformity. The same is true of a lesion situated on the bridge of the nose (Fig. 2) or on or near either ala nasi (Fig. 3), or on any portion of the ear (Fig. 5). Of course, these small lesions are also successfully eradicated from any area of the skin of the body successfully with radium (Figs. 4 and 6). But the face conditions are so striking and are cured with so much greater success by radium than by surgery that I feel sure that when the physicians at large are reminded of this great advance, they will be less prone to resort to the knife or cautery, with the resulting disfigurement of the patient.

Radium is no longer a new therapeutic agent. It has been tested and tried out from every scientific standpoint, and the results obtained after a period of ten years are conclusive.

I take the opportunity here to add a few

[1]Read before the Eastern Panhandle Medical Society, July 3, 1912, and reprinted in the *West Virginia State Medical Journal*, January, 1913, vol. vii, No. 7.

CASE I (Fig. 1).—History number 767. Patient 30 years of age. First seen April 17, 1914, with an epithelioma on inner canthus of the left eye. Received three treatments, the last one November 19, 1914. No return to date.



CASE II (Fig. 2).—History number 2883. Patient 68 years of age. First seen October 31, 1916, with an epithelioma on the nose. Received three treatments, the last one April 6, 1917. No recurrence to date.

CASE III (Fig. 3). History number 1699. Patient 70 years of age. First seen June 4, 1915, with an epithelioma of the nose. Received four treatments, the last one December 18, 1916. No recurrence to date.

CASE IV (Fig. 4).—History number 1983. Patient 40 years of age. First seen October 15, 1915, with an epithelioma of the upper lip. Received three treatments, the last one December 22, 1916. No recurrence to date.

CASE V (Fig. 5).—History number 3094. Patient 72 years of age. First seen February 25, 1917, with an epithelioma on the left ear. Received five treatments, the last one May 18, 1917. No recurrence to date.

CASE VI (Fig. 6).—History number 1706. Patient 58 years of age. First seen March 28, 1914, with an epithelioma of the face. Received two treatments, the last one June 4, 1914. No return to date.

cases of chronic skin conditions successfully treated with radium, all of which were totally out of the realm of surgery from any plastic standpoint. The radium treatment of all these conditions when properly controlled is without any danger. Three to five hundred milligrammes of radium are used for a period of twenty to thirty minutes. Usually two or three treatments are all that is necessary.

The accompanying pictures are illustrative cases, the histories being given in the legends.

TREATMENT OF ACUTE INFLAMMATION OF THE UPPER RESPIRATORY TRACT.

BUTLER, in the *Journal of the Medical Society of New Jersey* for May, 1919, states that treatment should be individual. For some patients, a day spent in the open air at whatever temperature, with vigorous exercise, will effectively "throw off a cold;" while for others it is necessary to resort to laxatives, hot baths, hot drinks, Dover's powder, quinine, atropine, nux vomica, and the various expectorants. Atropine is such a valuable drug to the rhinolaryngologist that it needs more than passing mention here. For the relaxation of acute, subacute, or chronic conditions, with leaking mucous membranes, and for the sinus pain accompanying acute rhinitis, it dries up the secretions and acts as a local tonic.

In severe weather the average patient does better to rest in an even temperature of 68° to 70°. Fresh air, but not frigid air, should be abundantly supplied to such patients while the mucous membranes of the upper air tract are inflamed; and warm inhalations, hot drinks, and rest are also indicated. In some cases local treatments not only give much relief, but are abortive and curative.

In the first stage of an acute rhinopharyngitis, when the mucous membranes are turgescent, the attack may frequently be checked by the following method of treatment: Contract the swollen tissue with an application of one-per-cent cocaine solution. After the nasal fossæ have been opened to the choanæ, the mucous membranes are bathed with a hot cleansing solution. For this purpose the use of the bulb syringe and the glass "duck" are condemned, as they flood the nose and subject the ears and accessory sinuses to the danger of infection. A fine, flexible silver cannula, about four inches in length, such as is used for irrigating the maxillary sinuses, is much less dangerous. The cannula is carried into the nose through the speculum, and under the direction of the eye the current is directed against the different parts successively. Not more than two ounces of the solution need be used.

After the irrigations the mucous membranes may be painted with a 25-per-cent solution of argyrol or other colloidal silver solution (such as silvol). This is followed up with a bland oily spray. The silvol is supposed to act by its weight as it penetrates the deep layers of the mucous membranes; it stimulates phagocytosis. Good results may be secured without the cocaine solution. Tampons of a 10-per-cent solution of argyrol placed in the nose for ten minutes, or a 25-per-cent solution simply painted on the surface and followed by the oil spray, are efficacious. The irrigations may often be omitted. Too many local treatments are irritating in acute inflammations, and one or two, given on alternate days, should be sufficient. Patients should not be sent out in the cold air immediately after local treatment. It is safer to have them wait from twenty minutes to a half-hour, until reaction has taken place. Douches and sprays used at home are often harmful.

Infectious diseases, influenza, whooping-cough, scarlet fever, etc., often leave as their sequelæ foci of pathogenic bacteria in the sinuses, nasopharynx, and tonsils, causing a subacute or chronic inflammatory condition, subject to acute exacerbations. It is of the greatest importance that these foci be eradicated and that immunity to the infection be established by an out-of-door life, regulated exercise, rest, and correct hygiene.

EDITORIAL.

THE USE OF ATROPINE IN ANESTHESIA.

One of the interesting points in the study of therapeutics is the discovery, every now and then, that a drug which has been found useful by clinical experience exercises its powers not alone along the lines already understood, but upon additional lines, which later scientific investigation discovers. A number of instances of this nature might be cited, but we wish in this editorial note to call attention to a research which has been comparatively recently carried out by Ross upon the effect of atropine on the quantity of sugar set free in the blood, in excess of the normal amount, when ether is administered. It is quite true that these experiments were made upon dogs and that the administration of the ether and the methods of experimentation may not have been closely allied to the care and caution which are now utilized when ether is given to a human being. Nevertheless, the investigations of Ross are, as we have said, of very considerable interest.

Surgeons and anesthetists have recognized more and more during the last two or three decades that the administration of atropine immediately before the administration of either ether or chloroform is advantageous to the patient. By some it is used with the idea that by this means an excessive amount of secretion, induced by the irritant ether, in the mouth and bronchial tubes may be prevented from forming. By others, particularly when chloroform is employed, it is considered that the advantage arises from the fact that atropine prevents a sharp fall in blood-pressure by maintaining the tonicity of the blood-vessels in the splanchnic area. Whether we accept one or both of these views, we repeat that we believe it to be generally recognized that the employment of atropine preceding anesthesia is useful.

Ross well points out that there are a large number of scientific investigations which have revealed the fact that fright, asphyxia, chloroform anesthesia, and morphine will produce an increase in the quantity of blood-sugar far above the normal. Indeed, any shock to a normal body at least temporarily increases blood-sugar, and as all these factors, with the exception of morphine, are present in connection with the administration of ether and chloroform, on practically every occasion we have more than one influence tending to cause the liver and muscles to give up sugar which they would otherwise retain.

It has also been recognized by careful anesthetists for a considerable period of time that those who stand ether and chloroform badly, particularly in the sense of developing postanesthetic poisoning, are persons who because of vomiting, or some malignant growth which has obstructed the stomach, are in a condition of more or less marked chronic starvation; that is to say, they have been utilizing the sugar which is stored in the liver and in the muscles in order to keep themselves going. Other investigators have shown that when the liver is starved and lacks its normal quota of glucose, chloroform poisoning is peculiarly prone to occur; whereas if by some means the liver can be well stored with sugar prior to the administration of an anesthetic, the danger of postanesthetic poisoning is greatly decreased.

In the investigations made by Ross he found that dogs which received a pure meat diet prior to the administration of an anesthetic were disposed to give a greater blood-sugar rise than those getting a mixed diet. He did not find that morphine had any effect on the rise in the amount of dextrose in the blood, but he did find that the use of atropine distinctly inhibited this opening of the sugar store-houses.

Incidentally he found that the greatest reduction in ether hyperglycemia was brought about by atropine in the first fifteen

minutes after its administration, that ether anesthesia raised the blood-sugar in fifteen minutes to 41 per cent without atropine, but only 9 per cent with atropine. An hour of anesthesia raised the blood-sugar to 57 per cent without atropine and 21 per cent with atropine.

Of course we all know that under certain circumstances it is advantageous for the economy to have the liver and muscles pour out into the blood stream a quantity of sugar in excess, since by this means tissues which are put under stress and strain, as, for example, the heart muscle or the voluntary muscles, receive an increased quantity of nourishment to meet such stress, and it might be held that the increased quantity of sugar following etherization is compensatory and advantageous. An answer, in part at least, to this latter proposition would be a series of urinalyses carried out to determine whether this great increase of sugar in the blood is accompanied by any loss of sugar through the kidneys, which would indicate, more or less indirectly, that the excess of sugar which is poured out is so great that the tissues cannot use it and, therefore, it is lost to the economy. If this does not prove to be the case on further investigation the value of atropine prior to anesthesia should be greatly increased in the eyes of those who employ anesthetics. In any event the custom of employing atropine prior to anesthesia receives additional support from this interesting research.

HEART MASSAGE FOR RESUSCITATION.

Readers of the THERAPEUTIC GAZETTE will recall that on a number of occasions in years past we have called attention to radical measures undertaken by desperate operators for the resuscitation of patients who were apparently dead as a result of the effects of anesthetics or possibly the combined effects of the anesthetic and operative procedure. They will also recall that there are quite a number of instances now on record in which life has been saved by cardiac massage. In some instances the massage has simply been applied to the chest wall over the heart. In other instances, as during an operation on the abdomen, the massage has been applied through the diaphragm, and in some instances the surgeon has been so bold as to incise the diaphragm and directly compress the heart, so squeezing the blood out of its cavities and starting it going again.

This subject receives renewed interest by reason of papers contributed to the *Indian Medical Gazette* of Calcutta upon this subject. The first contribution is by Bost and Neve and the second by Harries. Bost and Neve call attention to the fact that while these procedures have been repeatedly resorted to in many instances with complete success, the opportunity or necessity of employing them in the career of any one surgeon will present itself but once or twice if at all. They state that the first reported case in which complete success was obtained was in 1898, and again Starling and Lane wrote concerning it in 1902. Greene in the *Lancet* in 1906 reviewed the literature and gave an abstract of 40 published cases, and since then Frazier in this country, Lambert in Australia, Thomas in England, and several French and German surgeons have reported cases. It would appear that in those cases which have been followed by complete success the result has been somewhat dependent upon the promptness with which the procedure was resorted to, not more than six or eight minutes after heart stoppage; although Mollison in the *British Journal of Children's Diseases* in 1917 reported a case of good recovery after an interval of thirteen minutes. We have referred in these columns to this case.

Bost and Neve point out that one method has been to make a flap of the thoracic wall over the heart, turn it back, the base being either inwards or outwards, cut through the ribs, and perform massage, but this procedure may accentuate the shock, involves the intercostal vessels and nerves, and induces pneumothorax in some in-

stances. The subdiaphragmatic route seems the more sensible one. They state that this plan has been followed in many unpublished cases. The results are not only due to the emptying of the cardiac vessels of blood, but also to the stimulation arising from manipulation.

Some of the cases in which an incision has been made in the diaphragm have not been followed by good results probably because the surgeon has waited until the case was absolutely hopeless. The incision has usually been an anteroposterior one. This is not as easily made as would appear at first sight on account of the left lobe of the liver and the stomach, and there is also danger of injury to the musculophrenic artery and so having concealed hemorrhage. Furthermore, the suturing of such an opening is very difficult. They, therefore, advocate a horizontal incision behind the left costal margin. The abdominal incision is made four inches long in the median line from the xiphoid cartilage to the navel. The left costal cartilages are well retracted and a pillow is placed under the ribs. A two-inch incision, beginning one inch to the left of the median line, is carried outward behind the costal margin, cutting the fibers of the diaphragm near their insertion. A blunt instrument is pushed into the pleural cavity and the opening enlarged further with the fingers so that the whole hand can be inserted, the thumb being beneath the sternum and the fingers compressing the heart. No vessels are injured when this incision is made as the superior epigastric artery is internal to the incision and passes into the rectus muscle, and the musculophrenic branch enters the diaphragm through the cellular tissue between the eighth and ninth costal cartilages and passes backward deeper than the incision. The liver and stomach also offer no obstacles, nor is there danger of injuring the pericardium. If the incision is not too large it closes around the wrist of the operator so that air is not sucked in. Such an incision is also comparatively easy to close with sutures.

While this is being done, artificial respiration may be maintained whereby air in the chest is expelled.

Bost and Neve report a case of a man aged thirty-seven, severely wounded in both knee-joints, followed later by abdominal pain. The abdominal condition required a laparotomy, and although the patient was skilfully anesthetized, very early in the anesthesia the pupils dilated, the color became waxy, and the patient was pulseless. Auscultation revealed no heart sounds. Artificial respiration put air into the chest without resuscitating the heart, and so Bost made a four-inch epigastric incision and compressed the heart through the diaphragm. Twenty minutes later the case still appeared hopeless, and Bost incised the diaphragm as described above and grasped the heart. After twelve seconds a muscular twitch was felt, and five minutes later the pulse returned to the wrist, pituitrin was injected, and artificial respiration continued. The patient rallied and survived, living 77 hours after the operation. The autopsy revealed no pneumothorax. They believe that this case illustrates the value of heart massage, and that if the patient had not been primarily in a very bad condition he would have recovered. They assert that every surgeon, even of relatively little experience, should not abandon his case without giving him the benefit of heart massage.

In the article by Harries, a man was admitted, convalescent from dysentery and emaciated, on May 4, 1918. On June 13 the abdomen was sufficiently distended to make respiration difficult. The patient was anesthetized by chloroform. Before the operation was begun he stopped breathing. He became exceedingly pallid and pulseless. Artificial respiration produced no results and massage through an abdominal incision was therefore practiced. The diaphragm was not however incised. With the left hand over the precordium and the right over the under surface of the diaphragm Harries squeezed the heart rapidly between the two hands at the rate of about 50 to 60 per minute, and after the tenth

compression the heart started beating. It went on for thirty beats at the rate of 90 to 100 per minute and then stopped. The squeezing was repeated and the heart started again. Artificial respiration was in the meantime being performed. The patient recovered consciousness in two hours. Six hours later he had completely come around from the anesthetic and said he felt fairly well. His pulse was 98 and he was able to drink milk and water. He died however at 2 A.M.

Harries notes that while the heart could not be felt while it was stagnant, it could be immediately felt through the diaphragm when it commenced to beat.

It is evident that while these methods of treatment can be rarely resorted to and may rarely permanently save life, nevertheless they are methods which should be borne in mind by the practitioner in the presence of what otherwise seems to be certain death.

POINTS IN REGARD TO COLONIC IRRIGATIONS IN CHILDREN.

The practice of so-called enteroclysis is now well established as a therapeutic measure. In some instances it probably is used to excess, but more often it is practiced incorrectly. Not infrequently the nurse, and sometimes the physician, fails to recognize that a hydrostatic pressure greater than that represented by elevating the fountain syringe ten to twenty inches not only prevents the injection of a sufficient quantity of fluid to do good by making the intestine resent intrusion, but also causes so much pain that the treatment cannot be carried out, or if the pressure is persisted in it may do actual damage.

Not infrequently an inexperienced person is told by the physician to carry out colonic irrigation without instruction as to the hydrostatic pressure which is to be employed, and in one instance with which we are acquainted an attempt was made by the mother and the grandmother of an infant to give such an irrigation with the container hanging six feet or more above the bowel of the child, with the result that so much pain was immediately produced that the child was saved from harm by its own cries and struggles.

Then, too, not infrequently an attempt is made to insert the catheter or piece of rubber tubing too far into the bowel, the idea being that it must enter from six to twelve inches if the injection is to be efficacious. As a matter of fact any attempt to insert a hard-rubber nozzle a greater distance than two or three inches is prone to produce serious damage, and if a soft catheter is employed, this invariably curls upon itself, so that while a certain number of inches are introduced through the anus, as a matter of fact the tube does not reach more than three or four inches into the bowel.

An interesting paper dealing with this somewhat homely, but nevertheless important, subject has been recently written by Mills and Bird. The latter by the use of the *x*-ray has shown that the curling of the soft-rubber catheter invariably takes place.

They advise that the child shall lie on its back, or the left side, on a Kelly pad, and that the catheter shall be placed in the bowel for a few minutes before it is attached to the irrigation apparatus to allow for the escape of gas, since to start the injection at once, while gas is in the bowel, causes pain and prevents the carrying out of the procedure. After the gas has had an opportunity to escape the free end of the rectal tube or catheter can be slipped over the tip of the irrigation apparatus and the fluid permitted to flow, enough pressure being used on the tube to prevent the full force of the water from being expended as the first few drops enter the bowel, since if it darts in suddenly the bowel resents its presence.

Mills and Bird advocate normal salt solution or a 2- to 5-per-cent sodium bicarbonate solution at a temperature of about 100° F., and state that the quantity of solution which they employ is rarely less than two quarts, and more than this if it does not return clear.

The tube or catheter should have two holes, one at the tip and one at the side, so that if one is plugged the other may remain open. When the colon becomes fairly distended it expels most of its contents by discharging the returning solution alongside of the tube, and so there need be no fear of too much fluid being used or too much pressure being produced in the bowel.

The three practical points which deserve emphasis are, first, that the pressure employed shall not be at most over 20 inches, that gas be allowed to escape before the injection is given, and that a sufficient quantity of fluid be employed to thoroughly wash out from the colon the material which it is desired to bring away.

THE CONTROL OF SYPHILIS.

There has been so much written under such a heading that there may be danger of a common belief obtaining to the effect that this disease has really been controlled, or is in a fair way of so being. In reality a campaign against it is just beginning which will take years of persistent drive against bitter opposition; most of it of an implacable nature based on settled views of purity. Though the disease is in reality the most easily managed and well understood, in so far as its transmission is concerned, of all contagions, it is also the most crippling one. The application of the simple principles of management will prove difficult in the most intelligent communities and impossible to those cursed by ignorance, belief in past methods, or exaggerated confidence in the unknown.

Perhaps the basic feature of the campaign is that moral training which most children receive in their homes, supplemented by the religious support given by the various denominations. An effect of distinct value will be produced by wide education of the schoolboys and girls in regard to normal function and particularly concerning the transmissible diseases, the facts of syphilis being taken up in the same dispassionate and thorough way as are those of typhoid fever. Next comes the question of distraining inveterate disseminators. This includes practically all prostitutes and the distressingly large number of dissolute men willing to sacrifice any one to the gratification of their desires. This will be done by quarantine and segregation; moreover, by a system of selective reporting, since it is scarcely conceivable that the medical profession would be other than willing to place under State control probably the large majority of people of the classes above referred to.

Thereafter comes the question of the treatment and cure of these patients, or at least the rendering of them non-contagious. This is easily and quickly done: by arsenic in the course of hours, by mercury in the course of days in the active transmissible stages, and the later stages are not transmissible except by procreation.

Finally comes the question of avoiding the consequences of exposure when it occurs. This can be done by the immediate use of the early treatment package made of 33⅓-per-cent calomel ointment sufficiently liquid to allow of the injection of a small part of it into the urethra. This seems to have a potent effect also in lessening the incidence of gonococcal infection. The application is preceded by washing with soap and water and drying, and the ointment is allowed to remain on the surface for some hours.

It is against such a method of procedure that most objection will be raised, on the basis that it encourages immorality. Experience has shown it does not. Without this method the other adjuncts to public health will prove unavailing. The knowledge of the relative efficiency of such packages, their proper use, where they can be obtained, the so placing them that they can be quickly procured at a moderate price, should be diffused at the earliest possible moment.

PHYSIOLOGY IN SURGERY.

Leriche in *La Presse Médicale* for April 17, 1919, reports the case of a soldier who received a shell wound on September 25, 1915, and who was thereafter taken prisoner, remaining in Germany for three years. He returned with a huge scar and complete facial palsy, right labyrinthine deafness, and a parotid fistula. The maxillary fistula healed well, but the parotid fistula ran continuously with a great aggravation during meal-times. With the exception of the open eye there had been a readjustment so that the facial palsy produced no great deformity. The eye, however, was the cause of great trouble. It was widely open, nor could the most violent effort on the part of the patient close it. There was also constant lacrimation intensely annoying to the patient.

The parotid fistula was cured by tearing out the central end of the auricular temporal nerve. The discharge ceased the same evening and did not recur. Later for the purpose of lessening the palpebral fissure the cervical sympathetic was cut just above the superior cervical ganglion. Immediately the characteristic reactions were noted: vasodilatation of the face, shrinking back of the eyeball, and myosis. The patient by a vigorous action now closes his eye completely, and when he wakes in the morning there is only a minute fissure showing that the occlusion is in repose not complete. The lacrimation is notably diminished. To this article two convincing photographs are appended.

Led thereto by Teutonic hypnotism, medicine and surgery have been based on pathology, physiology being regarded as a study to be taken in the second year of the medical course, to be passed as a final examination, and to be promptly forgotten.

The whole end of professional work is to restore function, and the accomplishment of this depends upon a knowledge of mechanism and action which cannot be too minute or accurate. From which it follows that surgical and medical physiology should be the foundations of progress; pathology representing the history of the things that have been. In this relation the communication of Leriche is of particular interest since he accomplished a cure of two distressing complications of wound injury by purely physiological methods, simple, safe, and entirely effective, and replacing the various plastic and graft procedures which have heretofore been employed, often with partial success and resulting deformity, and which in this particular instance were probably inapplicable because of the extent of scar tissue. Sympathectomy has been employed for a variety of conditions, particularly in the treatment of goitre, but not in so far as the thyroid lesion is concerned with such gratifying success as to justify its general acceptance. In relation to the exophthalmos, however, it has been eminently successful. It is sometimes performed for this condition when it persists after the removal of the goitre, and is based entirely on a knowledge of function; the unstriped muscle fibers of the upper lid and those of the orbit bridging the sphenoidal fissure being supplied from this source. The extraordinary rapidity of the cure of the conditions present in the case reported is remarkable.

REPORTS ON THERAPEUTIC PROGRESS.

WATER HEMLOCK POISONING.

STRATTON in *Colorado Medicine* for May, 1919, states that at the State Home for Dependent Children, Denver, on the evening of April 23, 1918, eleven boys between the ages of eight and twelve years were seriously poisoned by eating the root of the water-hemlock, or *Cicuta occidentalis*. Two of the cases were fatal. The boys had eaten the root after six o'clock while out on the grounds, after their evening meal. They were taken sick in about an hour after eating. Those first taken sick had been in convulsions between thirty and forty minutes when first seen, others for a much shorter time. Still others were taken sick later. One of the fatal cases, in another dormitory, Stratton did not see.

It was decided that morphine would be the best immediate treatment. The superintendent made an investigation of what the boys had been eating. He found they had been eating a root.

The sickness began with acute cramp or severe pain in the stomach, with an inclination toward a bowel movement and vomiting. Mostly, the vomit was a clear frothy fluid. (Those who vomited the stomach contents were not so sick.) They then became dazed and fell wherever they were, and went into the most frightful convulsions and unconsciousness. None of them remembered anything about the events of that night when they awoke in the morning in the County Hospital.

The spasms were of a tonic character, accompanied by cyanosis and frothing at the mouth. The pupils were widely dilated, and the eyes open, eyeballs rigid and corneal reflex absent. With some the eyes were rolled up and the head drawn backward when they went into convulsions, and they became rigid in that position. In the case of others the eyes were bent downward and the head forward. The jaw became locked, and it was impossible to give anything by mouth. The legs were somewhat parted and partly flexed; the arms partly flexed and held from the body; the hands clenched and finger-nails blue. The muscles of the whole body were rigid and hard.

In those who had been in convulsions some time the pulse was fast, irregular, and weak. During the severe convulsions the breathing was interfered with to such an extent that the face was blue and livid and one wondered if they might not die from suffocation. The external surface of the body was cold. There was no bowel action or urination during the convulsions. Once in a while the convulsions would relax, only to return.

THE ADMINISTRATION OF ARSPHENAMINE.

McCOY (*Medical Record*, May 10, 1919) states that there is a lamentable want of care on the part of many physicians who administer arsphenamine as to the concentration of the drug used and the time required for administration.

The United States Hygienic Laboratory receives many complaints in regard to untoward results from the administration of arsphenamine made by various American producers. When careful investigation is made it is almost invariably found that the drug has been used in a solution that is too concentrated, and that it has been administered too rapidly. McCoy has reports of a dose of 0.4 gm. being given in a volume of as little as 25 Cc. and injected within thirty seconds. Such practice is abuse, not use, of a powerful therapeutic agent.

If, in addition to the usual precautions as to the use of perfect ampules and neutralization, physicians would give the drug in concentration of not more than 0.1 gm. to 30 Cc. of fluid and allow a minimum of two minutes for the intravenous injection of each 0.1 gm. of the drug (in 30 Cc. of

solution), the number of reactions would be very materially reduced. This would necessitate from 90 to 180 Cc. of the solution for the doses usually given and would require from six to twelve minutes for the injection.

Any physician who fails to observe these precautions should be considered as directly responsible for serious results that follow the improper use of the drug.

LOSS OF HAIR AS A SEQUEL TO INFLUENZA.

MARSH, in the *Medical Times* for May, 1919, states that the loss of hair usually begins in from one to four weeks following the original fever. In all of the cases seen by him the loss has been extreme, in one case one-quarter in one week; in another a half in less than two weeks.

Treatment has been limited to daily applications of a stimulating lotion with vigorous massage. The following is recommended:

Mercury bichloride, gr. ss;
Tr. cantharides, mins. xxx;
Chloral hydrate,
Resorcin, āā 3j;
Castor oil, gtt. xxx;
Alcohol (70%), q. s. ad f℥iv.

As a rule the prognosis in these cases is good, but it is rather early to say much concerning prognosis in this particular group following influenza. In the younger patients it would seem to be good, as already in some new hair has been observed growing vigorously.

ARTIFICIAL PNEUMOTHORAX IN PULMONARY TUBERCULOSIS.

PETERS, in the *New York Medical Journal* of April 26, 1919, states that the results in pneumothorax work must be considered from two angles—the immediate and the end. End results, of course, are the only ones worth while from the standpoint of both patient and physician, and these alone speak for the continued use of the method. The reports given at this time by numerous operators are based upon facts, and are no longer clinical impressions. There have been a sufficient number of men using the treatment, over a sufficient number of years, to make it possible to draw conclusions from a large number of patients. And those writers who have reported their work are uniformly agreed that the results obtained are far in excess of any hitherto published statistics, covering the same class of cases.

Most authorities are of the opinion that treatment must be kept up long enough to give nature an opportunity to form a firm fibrosis in the affected side. Unless this is done the lung will become active as soon as the compression is abandoned. Very few, if any, advocate a shorter period than one and a half to two years. Some even believe that at no time should the lung be allowed to resume its functions. However, a two-year period should be long enough, and in Peters' experience those patients in whom the lung had been let out had attained perfect healing of the diseased area. Cases of far-advanced tuberculosis, in which the prognosis was practically hopeless and which have done well under treatment, should never be allowed to discontinue the fillings.

The ability of the gas lung to again resume its functions depends entirely upon how much original trouble existed there. Many lungs in his series, in which there had been little disturbance of tissue, have resumed practically a normal respiration, and unless one knew the side that had received the compression it would be hard to determine this from an examination. On the other hand, when much tissue has been destroyed the fibrosis is extensive, and these lungs are of little use in the function of respiration. Some seem to remain compressed to a greater or less degree, and slight deformity results from the contraction of the chest wall. This can be considered only in the light of a fortunate ending, for many of these same lungs might light up activity were they to reëxpand.

The immediate results of the operation

depend, of course, upon the amount of compression established. If one finds a free pleural space and the compression is complete marked improvement follows; cough is decreased, sputum lessened, and the toxic symptoms subside almost at once. The patient notices a marked general improvement in his physical condition and there is a general feeling of well-being. In a remarkably short space of time the patient is able to be up and about and enjoys much greater freedom than perhaps has been possible for months.

It is surprising how little dyspnea is encountered. Very few complain of shortness of breath and are able to move about in comparative comfort. Some of his patients play golf, while many are engaged in useful occupations without harmful effects. Very seldom does one see disturbances of the circulation. At the beginning of compression in left-sided cases there may be an acceleration of the heart action from pressure of gas and the displacement of the heart to the right, but this soon subsides and the pulse becomes normal. Graetz has shown in his autopsy work that there is no noticeable hypertrophy of the right heart.

The factor that stands out more noticeably than any one thing is the extensive amount of connective tissue formation. This without question is the end result aimed at in the treatment of tuberculosis, and, as Gekler puts it, the formation of this connective tissue is far greater in compression cases than in any treated by tuberculin, vaccines, and the usual routine methods in vogue in the average sanatoriums. Further, he states that one never sees these broad flat scars, indicating healed cavities, except in the operative cases. Here, again, the autopsy table furnished the final proof of the value of this method of treatment. When one encounters adhesions and only a small portion of the lung is compressed, naturally little good can result and the symptoms are not relieved. At times, by care and patience, a fair degree of compression can be established in these adhesion cases, which relieves the condition somewhat, and ultimately a fair result, at least symptomatically, is obtained.

The question of end results brings up the query whether or not these patients will remain cured, or if it is not probable that the disease will again light up when the treatments are discontinued and the lung allowed to expand. Here, again, he quotes Gekler, who was Brauer's assistant for one and a half years, and by reason of this can speak from wide experience and observation: "I can only relate what I, myself, have seen, and say that in those cases where a satisfactory collapse was obtained, the permanent results, even in advanced and far-advanced cases, are often as good as those obtained with incipient cases treated by non-surgical means—in other words, clinical cure. I have known women patients to get married, after having recovered from tuberculosis by pneumothorax treatment, and even go through the ordeal of childbirth, which it seems to me is as good a test as we have. As Brauer's assistant I had opportunity to see and examine particularly all of his patients who reported for reëxamination, and most of them were engaged in their usual vocations, only observing such precaution as an intelligent person would observe who was familiar, from personal experience, with a disease as treacherous as tuberculosis. One of these cured cases was an orderly in Brauer's clinic, and did quite as heavy manual labor as was exacted of other orderlies who had never been sick. It seems to me that these results speak for themselves."

Sachs, in a very exhaustive study of results, shows that in a collection of 1108 cases 29.2 per cent were improved, 10.8 per cent were quiescent, 9.5 per cent were arrested, and 1.4 per cent were cured. The term cure here really spells nothing, for many arrested cases are as able to work and enjoy a good degree of health as the so-called cures—6.2 per cent of these patients were working. These he terms immediate results, as many were only re-

cently discharged or still under treatment. Thus, to quote Sachs, the immediate beneficial result in the treatment of these 1108 cases was mostly palliative in 29.2 per cent and apparently durable in 21.7 per cent. In the European reports the palliative result was 31.2 per cent and the durable results 25.9 per cent. The latter were patients discharged from six months to five years, while the former are for much shorter periods. As to the subsequent course of these cases Sachs believes it is a conservative estimate to attribute to durable results 12 per cent, while in more than double this number a palliative effect is produced. The sum total is a distinct increase in the chances of the advanced case which does not respond to the usual methods of treatment.

Murphy, the pioneer in the work in this country, makes the statement that thousands of cases could be collected from the literature, showing a complete symptomatic cure in many and a vast improvement in a great majority of patients. He and his associates sum up their results, and those obtained from a study of the literature, as follows:

1. The decline or disappearance of fever, showing a diminution or inhibition of absorption from the mixed as well as the tuberculous infection.

2. The diminution or disappearance of the expectoration.

3. The disappearance, partial or complete, of the bacilli in the sputum.

4. The gradual increase in weight.

5. The lessened frequency of hemorrhage.

6. The great general improvement of the patient and the short time in which these changes take place.

The work in the Muphy clinic is now being carried on by Kreuscher with very gratifying results in a large proportion of cases. Floyd, who was one of the first to begin the compression in this country, after its revival, very recently made the statement that where the treatment is carried out thoroughly it may be expected that about fifty per cent of the cases will be either arrested or markedly improved.

The foregoing gives one a fair idea of the general results obtained from a study of the literature, both European and American. The results in Peters' own work differ but little from the general averages, although somewhat higher than those collected by Sachs, covering a large number of patients.

The percentage for discharged patients is as follows:

Arrest	31 per cent.
Improved	13 per cent.
Stationary	9 per cent.
Progressive	3 per cent.
Dead	44 per cent.

Unless he calls to our notice the results in this same class of patients by the usual routine, these figures spell nothing. Therefore he has elected to make comparisons, and to that end has chosen average results, from the East and the West, for comparative purposes. He has looked over State sanatorium reports in addition to those of private institutions and averaged these for the East; and for the West he has averaged the reports of the three government institutions and private sanatoria. The average thus obtained shows in this type of case—in the East 4.5 per cent arrests and in the West 15 per cent arrests. He has intentionally omitted comparison of the other results, inasmuch as restoration of economic usefulness is in reality the only phase worth consideration. To put it more graphically, then, by means of artificial pneumothorax we have changed results in unfavorable types of tuberculosis from 4.5 per cent arrests East and 15 per cent West to 31 per cent arrests, making it seven times better from the Eastern standpoint and twice better from the Western. In other words, we have doubled the chances of the unfavorable consumptive, even under the most favorable climatic conditions.

These results should make possible the saving of many lives in the East who are unable to avail themselves of the luxury of climate and are forced, by necessity, to take their chances in less favorable localities.

Again Peters states that by the introduction of artificial pneumothorax we have by far the greatest weapon against pulmonary tuberculosis that has yet been given the unfortunate consumptive, and in the years to come he predicts that this method of treatment will be the one in general use in all institutions caring for the tuberculous invalid. It is to be hoped that the few complications that to-day cause the majority to hesitate to enter chests with early lesions will some time be relics of the past, and that the procedure will be practiced in incipient tuberculosis. If this time comes Peters is firmly convinced that the results will be far more gratifying than the countless victims of this disease or the hosts of physicians caring for the tuberculous ever dreamed possible.

TREATMENT OF PULMONARY TUBERCULOSIS IN CHILDREN BY ARTIFICIAL PNEUMOTHORAX.

STOLKIND, in the *British Journal of Children's Diseases* for January-March, 1919, mentions some peculiarities about the technique, especially concerning radioscopy, which are important for pneumothorax treatment in children and adolescents. [Some clinicians do not believe these classes of patients should be given this treatment. —ED.]

There are many forms of pneumothorax apparatus, some of which are unnecessarily complicated. The apparatus should be easy to sterilize, portable, and not expensive. Every medical man can construct such apparatus for himself.

In Stolkind's first cases he introduced only nitrogen, but later nearly always air, and he could not find any difference between nitrogen and air in the influence on the compressed lung and general state.

The analyses of the gas introduced into the pleural cavity have also shown that there is a diffusibility of the gas, and that after a short time there can always be found a mixture of the same gases (nitrogen, oxygen, and carbonic acid), independently of whichever gas was previously introduced (Davy [1823], W. Ramsay [case of M. Davies], Tachau and Tilenius, Tobisen, Webb, Gilbert, James and Havens).

Some authors propose to use oxygen at the first operation for avoiding the possibility of gas embolism.

The first introduction of gas into the pleural cavity can be produced either by incision or by puncture. It is only in cases in which owing to pleural adhesions repeated attempts to introduce air are unsuccessful that he first makes a small incision through the skin and intercostal muscles to the pleura.

For gas insufflation by puncture various needles have been proposed. Murphy used a simple Potain trocar, which was afterwards modified by Würtzen and Kjer-Petersen, Saugman and others, as well as by himself. His needle-trocar, which is especially of use for children at the first operation as well as for refills, is much shorter and finer than Potain's trocar, and can be taken to pieces. The needle is that of an ordinary syringe, and its end is sharp, oblique, and very small. The upper part of the cannula is constructed so that by removing it and the pilot a Record syringe can be attached.

At the first operation a small U-glass manometer with colored alcohol, as he has seen it used by Würtzen, of Copenhagen, can be introduced near the needle-trocar with a view to diminishing the risk of gas embolism.

As to manometric fluctuations he only mentions that the manometric pressure should be adapted for every patient. In some cases, especially of pleural adhesions, he was obliged to introduce gas until a high pressure was reached; in other cases it was necessary to maintain a low pressure.

As to radioscopy, without which Stolkind would not advise the pneumothorax treatment in children, he repeats what he said at the International Congress of Medicine (London): "I wish to emphasize that for modern pneumothorax treatment it is nec-

essary to use not only the manometer, but also radioscopy; without the latter a proper pneumothorax treatment is almost impossible."

X-rays are of great value in considering the diagnosis and treatment of pulmonary tuberculosis, both for the indications for artificial pneumothorax and during the whole period of application of this method. Radioscopy shows how much the lungs are diseased, which part is most affected, the location of deep-seated areas of consolidation, as well as small cavities, which often cannot be discovered by other means, the pressure of slight pleural effusion, and the mobility of the diaphragm. *X*-rays partly also help to find the place where the lung which we wish to compress seems to be normal or less diseased, and where therefore we are more likely to find less developed pleural adhesions or a free pleural "cavity," etc. In some cases Stolkind refused to perform pneumothorax because radioscopy had shown that the other and "better" lung was more diseased than he expected after physical examination.

After introducing gas the *x*-rays show whether we have really performed a pneumothorax, and if so, of what size and where; how the lung, the cavities, etc., are compressed; if there are pleural adhesions, their location, etc.

After introducing gas the *x*-rays show whether we have really performed a pneumothorax, and if so, of what size and where; how the lung, the cavities, etc., are compressed; if there are pleural adhesions, their location, etc.

In the absence of pleural adhesions, in case of a successful pneumothorax, the *x*-ray screen shows the lung compressed from all sides in the middle of a pleural cavity close to the mediastinum. In cases of firm pleural adhesions he has seen various forms of the collapsed lung (convex, concave, convexo-concave, etc.), according to the situation of the adhesions. In some cases the adhesions were at the apex and diaphragm; in others at the chest wall, as well as between the pericardium and diaphragm, etc. In one case of his the *x*-rays showed that there was also some gas on the other side of the vertebral column. Radioscopy shows the displacement of the heart and mediastinum, the compression of the other lung, the diminution or increase of pleural effusion, the appearance or disappearance of existing pleural adhesions, and the presence of cavities, pneumonia, etc., in the other lung. Radioscopy is also a guide as to when to make the refills and how much gas to introduce each time. In the last period of pneumothorax treatment *x*-rays help much to decide when it is possible to stop the refills, and when we try it we can see if the cavities and diseased lung are cured or not, in what condition the compressed lung is (*e.g.*, expansion of the lung), if it is necessary again to compress the lung, etc.

As to the quantity of gas injected into the pleural cavity at the first operation and refills, the opinion of Stolkind is that in the pneumothorax of children it should be carefully dosed, and that no more than 500 Cc. of gas should be introduced at one time. The amount of gas introduced each time and the intervals between refills in children depend upon (1) the pressure in the pleural cavity; (2) the degree of the displacement of the heart and mediastinum; (3) the state of the collapsed lung; (4) the rapidity of gas absorption; (5) the patient's respirations; (6) the general condition; (7) the conduct of the child during gas insufflation. Generally the refills in children during the first months should be made nearly every seven days, and later every two to six weeks.

At the first operation, as well as at refills in the case of children, anesthetics—general or local—should always be used. Before the operation he injects pantopon or morphine subcutaneously under an ethyl chloride spray. Novocaine (½ to 1 per cent) combined with adrenalin should be injected under the skin and into the muscles and pleura (under an ethyl chloride spray) a few minutes before the operation to make the insertion of the needle painless.

Rist, in a case of tuberculosis in an infant, aged twenty months, used chloroform at each insufflation of gas.

[Pulmonary tuberculosis is so rare in infancy and adolescence that we are surprised that Stolkind has had so large an experience.—ED.]

HEMORRHAGE FOLLOWING REMOVAL OF THE TONSILS AND ITS TREATMENT.

MOORE, in the *Journal of Laryngology, Rhinology and Otology* for April, 1919, states that since the introduction of tonsillectomy during the last twenty years the records have been incomplete. Cocks and Dutrow consider that hemorrhage frequently follows the complete operation, whereas Barnes and Tilley consider that hemorrhage occurs less frequently after complete than after partial tonsillectomy.

Complete tonsillectomy with the blunt guillotine is advocated by Pybus, Whillis, Faulder, E. D. Davis, and others. Luc and Whale are of opinion that complete tonsillectomy causes more dangerous hemorrhage than does the partial operation. Hill and Elphick have described a method of hemostatic enucleation by a specially devised guillotine. The majority of operators appear to agree that enucleation with the guillotine with blunt-bladed instruments is more satisfactory, and that hemorrhage is more likely to occur after enucleation by dissection.

The principal sources of the hemorrhage are the following: (1) The tonsillar artery or its branches. (2) The ascending pharyngeal. (3) A branch from the descending palatine. (4) A branch of the ascending palatine. (5) A branch of the dorsalis linguæ artery. (6) Capillary oozing from small vessels. (7) An enlarged venous plexus. (8) The internal carotid.

The anatomy of the origin traversed by the tonsillar artery and its branches is fully described, and three illustrations are given (Figs. 1, 2 and 3). The "bleeding points" are carefully indicated in Fig. 1.

The pulsations of the ascending pharyngeal artery may occasionally be seen on inspection of the pharynx. Its course is described, and cases of pulsation of this artery reported by Conolly and Stuart-Low are referred to.

The position of the bleeding point of the descending palatine branch is indicated, and the place of its concealment under the angle formed by the junction of the faucial pillars is illustrated in one of the figures. The distribution of the ascending palatine artery is also described and illustrated.

FIG. 1.—Shows position of the favorite bleeding points after tonsillectomy: (A) The anterior faucial pillar containing the ascending palatine branch of the facial artery. (B) The posterior faucial pillar containing a branch from the descending palatine of the ascending pharyngeal artery. (C) The tonsillar branch of the facial artery—one of the most common sites of hemorrhage, i.e., the central portion of the tonsillar bed where this artery enters the tonsil. (D) The tonsillar plexus of veins at the inferior portion of the bed. (E) The tonsillar branch of the descending palatine branch of the ascending pharyngeal artery. (F) Tonsillar branches of dorsalis linguæ. (G) Tonsillar branch directly off the ascending pharyngeal, or from its descending palatine branch. The plica is not shown in the drawing.

The internal carotid lies well away from the tonsil, but its course is sometimes abnormal, and when this is the case it has occasionally been severed in operations on the tonsil.

Adrenalin is unsuitable for prophylactic purposes, as it predisposes to secondary hemorrhage. Pituitrin is valuable; its use reduces the loss of blood, and reduces the

coagulation time of the blood by one-third or one-half; it also increases the strength of the heart-beat and reduces its frequency.

Subcutaneous injections of fresh blood-serum are valuable; horse serum yields the best results, and coagulose, which is prepared from horse serum, has been found

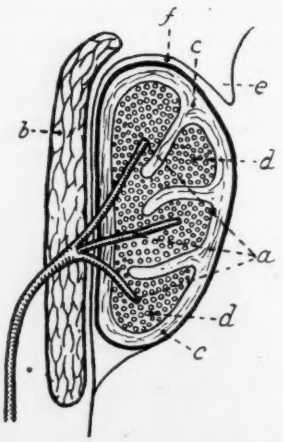


FIG. 2.—Diagrammatic illustration of one of the commonest sites of tonsil hemorrhage, i.e., the middle of the fossa, where the tonsillar branch of the facial artery pierces the superior constrictor muscle of the pharynx (after Ballenger). (a) Subdivisions of the tonsillar artery. (b) Superior constrictor muscle of the pharynx. (c) Fibrous capsule of the tonsil. (d) Lymph follicles or substance of the tonsil. (e) Plica supratonsillaris. (f) Supratonsillar fossa.

useful as a prophylactic before operation on the throat.

Hemorrhage occurring after the removal of one tonsil should be controlled by sponge-pressure or gauze swabs in the tonsillar bed before the other tonsil is touched, and the patient's head should be turned over to the side so that any blood in the pharynx may run out of the corners of the mouth. Ice or iced water is efficacious in controlling moderate bleeding. The patient should not be removed from the table till all bleeding points have stopped.

Reactionary hemorrhage occurring after operations generally comes on three or six hours later. The most dangerous type is a slow, persistent oozing from the whole surface of the wound. A large clot may form in the bed after the removal of the tonsil. This clotting must not be confused with normal clotting of blood in severed vessels. Hemorrhage generally ceases after removal of the clot. The loss of blood from reactionary hemorrhage may be great, and is often fatal, especially in young children. If hemorrhage occurs from an artery, the vessel should be seized with a long-handled artery forceps and twişted or tied, or the forceps left in position. If the bleeding is general, firm pressure of a sponge in the tonsillar bed for ten or fifteen minutes is generally sufficient to stop the bleeding. The use of a clamp or hemostat is not generally recommended, as it causes discomfort and sloughing.

Ice may be used as a hemostat, but it is less useful in secondary than in primary hemorrhage. The hypodermic injection of morphine and atropine is useful in controlling restlessness and reduces the blood-pressure. Calcium lactate is not very efficacious; adrenalin is contraindicated; pituitrin is useful in controlling urgent hemorrhage.

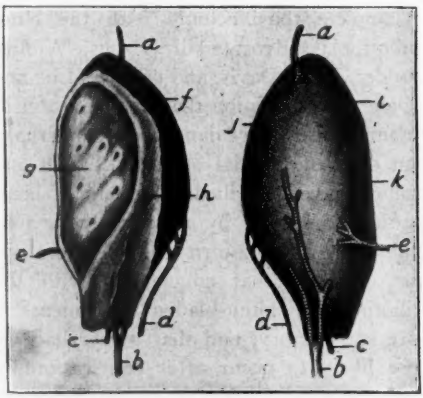


FIG. 3.—The left tonsil, showing its arterial supply (after Fetterolf). (a) Superior tonsillar branch from the descending palatine branch of the ascending pharyngeal artery. (b) Inferior tonsillar branch from the dorsalis linguæ; runs up middle of outer surface between capsule and outer wall. (c) Anteroinferior tonsillar, or artery of the plica triangularis, branch of the dorsalis linguæ. (d) Posteroinferior tonsillar—the tonsillar artery—branch of the facial. (e) Posterior tonsillar, a branch from the descending palatine of the ascending pharyngeal, and is severed during the separation of the tonsil from the posterior pillar. (f) Capsule. (g) Mesial surface. (h) Annular plica. (i) Posterior surface. (j) Lateral surface. (k) Groove for pharyngo-palatine muscle.

Traumatic hemorrhage in hemophilics is said to have been arrested by horse-serum. Saline gelatin solution subcutaneously injected into the flanks or gluteal region reduces the coagulation time. In postopera-

tive hemorrhage hemostatics should only be regarded as a useful adjunct to compression.

The encouragement of syncope as a means of stopping loss of blood is an unsurgical procedure.

Ligation of the common carotid artery has been devised in severe cases, but this method is not often successful, and is a

FIG. 4.—Needle for suturing the faucial pillars. The same needle can be used for either side.

serious measure to follow so simple an operation as removal of the tonsils.

Temporary suturing of the faucial pillars, formerly a difficult operation according to some authors, is rendered simple if the proper instruction be used under an anesthetic. A half-circular needle is at-

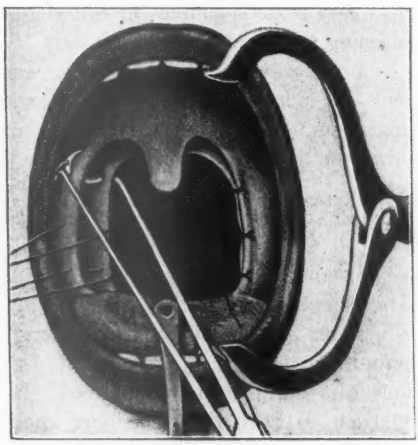


FIG. 5.—The arrest of hemorrhage after removal of tonsils by temporary suturing of the faucial pillars. Shows the needle (threaded with a catgut suture) passed through the faucial pillars, also the method of securing and drawing the suture through the needle by means of a long hook.

tached to a flat handle for this purpose (Fig. 4). One of the illustrations (Fig. 5) shows the needle (threaded with a catgut suture) passed through the faucial pillars; also the method of securing and drawing the suture through the needle by means of a long hook. The ligature may be tied by introducing the fingers into the mouth, or by means of ringed forceps, which do away with the difficulty of the introduction of the fingers (Fig. 8).

Many hemorrhages are due to want of postoperative care. The patient should be kept in bed in the lateral position after operation. While recovering from the anesthetic the patient should have a cork or bobbin placed between the teeth so as to keep the mouth open and prevent swallowing. Expectoration should be prevented. The child should not lie on its back, as the blood may trickle into the stomach, and in this way a large amount of blood may be lost. The nurse should be instructed to see that the child is not swallowing a large quantity of blood. Pulse failure may be restored by a rectal saline—a remedy, how-

FIG. 6.—Ligature hook.

ever, that should be cautiously applied, as saline injections cause increased blood-pressure, which may reopen the vessels, unseal the clots, and renew the bleeding.

The patient should be kept in bed twenty-four hours after the operation. Cold or iced drinks are best and only soft food allowed; all hot, hard or irritating food should be avoided. The mouth should be kept clean and the wound aseptic.

The amount of postoperative hemorrhage without doubt depends on the technique of the operation and the skill or otherwise of the operator, but cases of troublesome hem-

FIG. 7.—Forceps for tying the ligature.

orrhage are liable to occur even when the operation is most skilfully performed.

The author describes a case of his own of severe hemorrhage following complete enucleation of the tonsils in a delicate, anemic boy, aged six.

Extensive bleeding, followed by vomit-

ing of blood from the stomach, came on two hours after the operation following an attack of coughing. The right tonsillar fossa was found filled with a large clot disguising leakage behind. The clot was removed, sponge pressure applied, and morphine and atropine injected, and the bleeding ceased. Recovery was slow.

Want of sufficient preparation before aperation is one cause of bad hemorrhage; and when hemorrhage is profuse it is often allowed to go on with the idea that it will sooner or later spontaneously cease.

During the past five years he has seen

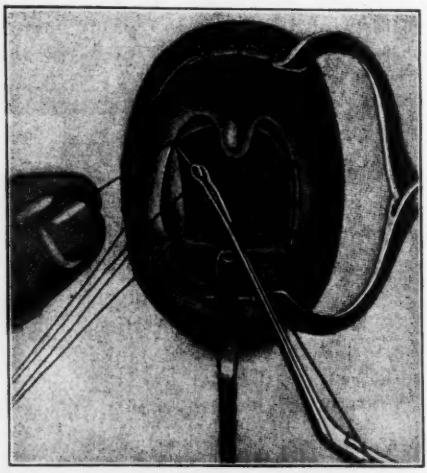


FIG. 8.—The arrest of hemorrhage after removal of the tonsils by temporary suturing of the faucial pillars. Showing how the ligatures may be tied by means of forceps, so avoiding the difficulty of introducing the fingers into the mouth.

in consultation or had part treatment of seventeen cases of serious hemorrhage following removal of tonsils; ten patients were adults (seven males and three females); seven were children (five males and two females). Three of the adults were treated by suturing the faucial pillars; in the remainder the hemorrhage was stopped by clearing away clots from the tonsillar bed followed by continuous sponge-pressure and the hypodermic injection of morphine and atropine. There was no history of bleeding, nor could any special bleeding-points be found in any of the cases.

The early suturing of the faucial pillars is advocated in all cases in which sponge-pressure or ligature has failed to control bleeding, and before loss of blood has been sufficient to reduce the strength and damage the health of the patient.

AUTOSERUM INTRASPINAL TREATMENT OF CHOREA.

BROWN, SMITH and PHILLIPS, in the *British Journal of Children's Diseases* for January-March, 1919, state that it is most essential that both tuberculosis and syphilis be excluded, and that all drug therapy be suspended for at least five days previous to the injection of autoserum. Most serious results have been encountered when this latter point has not been observed. Drugs circulating in the blood-plasma have a much more potent effect when injected into the canal, and serious results are thus obtained, particularly after the use of salicylates, when very toxic symptoms of salicylic acid poisoning have presented themselves.

In practically every instance the treatment was administered in the out-patient department, the patients returning home within an hour or two following the injection.

The first step consists in withdrawing about 50 Cc. of blood from the median basilic vein. In some instances an anesthetic is necessary, as the patient is often too nervous to keep still sufficiently long to obtain the amount of blood required. Ethyl chloride is the anesthetic employed. It is important to have the tourniquet applied just tight enough to impede the arterial flow; of course one soon empties the arm of the venous blood, and no more can be obtained until the tourniquet is released. A good plan in this connection is to use a blood-pressure band on the arm and have it inflated to about two-thirds the blood-pressure. The blood is received into three sterile test-tubes, the rubber tubing and needle having been previously sterilized and held so that the opening in the test-tube is protected from contamination by a piece of sterile gauze wrapped about the rubber tubing down to its point of entrance into

the test-tube, the gauze from there on being held about the test-tube. The tubes are stoppered with sterile plugs and set aside for a few minutes to allow the blood to clot. Before putting in the centrifuge a sterile platinum loop is run down inside each tube to separate the clot from the test-tube in order to obtain the greatest amount of serum possible. The test-tubes are then put in the centrifuge for thirty to forty minutes. At the end of that time the serum is drawn up in a sterile pipette, emptied into a sterile test-tube, and put in the incubator to keep at the proper temperature for injection. In the first few cases the serum was inactivated before injection. At present they are omitting this, trusting to their technique to keep the serum sterile. From 50 Cc. of blood they obtain 20 to 25 Cc. of serum. The preparation of the serum takes about one to one and a half hours. The patients come to the out-patient department about 9 A.M. and the serum is ready at 11 A.M.

The patient is prepared as for lumbar puncture. As they always administer an anesthetic, the patient is given no breakfast. The serum is drawn into a 20-Cc. Record syringe, which fits the ordinary lumbar puncture needle. The patient is then anesthetized with ethyl chloride, the needle inserted, and about 20 to 25 Cc. of spinal fluid withdrawn. The Record syringe is then attached and the serum slowly injected. This is the crucial step in the operation, as it is essential to give as much serum as possible without causing pressure symptoms. As one slowly injects the serum, when sufficient has been injected one feels definite obstruction to the entrance of the serum. Further injection, after this resistance has been encountered, invariably results in marked pressure symptoms, such as vomiting, severe headache, elevation of the temperature, etc. An anesthetic is necessary to enable one to detect this sense of resistance. In their series of cases they have used on an average 17 Cc. of serum.

The patients are kept in the hospital for one to two hours to watch for pressure or heart symptoms. They are then sent home to bed one week, when they return to the hospital. In the interval the public health nurses visit them to see that instructions are carried out. Usually improvement follows in two or three days and has become stationary again by the end of the week, when they return to the hospital and another treatment is given.

Following the injection there may be a mild disturbance, such as slight rise of temperature, a slight stiffness of the neck, or increase in pulse-rate. These rapidly pass off. Nothing solid is given to eat for six to eight hours following the treatment.

In the discussion which followed their paper it was stated that in practically every instance there had been previous medical treatment given, with the usual indifferent and unsatisfactory results. In most cases there was a mild reaction in the form of vomiting and an occasional rise in temperature, and on only one occasion was the reaction of such a nature as to prevent the return of the patient to the clinic owing to parental objection. The withdrawal of an equal amount of spinal fluid as serum injected did not appear to be necessary.

It occured to them that failure to obtain satisfactory results and prompt reaction might be due to the lack of sufficient antibody production in the plasma. This seems to us quite within the limits of possibility, taking into consideration the individual varying susceptibility to disease.

The conclusions are as follows:

1 Autoserum therapy has been productive of infinitely more satisfactory results than any other form of therapy, a cure of 77 per cent of the cases being effected within three weeks' time.

2. The technique is so simple that it may be employed in any home or out-patient department under mild anesthesia.

3. With the observance of proper precautions the reactions are negligible.

4. There have so far been no recurrences in over a period of a year and a half, but more time is necessary in order to give a more certain decision on this point.

PREVENTION AND TREATMENT OF SEASICKNESS AND ALLIED CONDITIONS.

ROSEWATER, in the *New York Medical Journal* of April 26, 1919, states his summary as follows:

1. To prevent seasickness or carsickness treatment should be begun preferably one or two days or at least a few hours before sailing or traveling, and should be continued during the trip, so that nausea, dizziness, and vomiting may be prevented.

2. By increasing the normal but often insufficient peristaltic force of stomach and bowels with drugs such as aloin, belladonna, and strychnine, and thereby preventing antiperistaltic forces overpowering the normal peristalsis, a simple and practical method is offered to prevent or correct seasickness and carsickness, which has thus far met with perfect success.

3. The prevention and cure of seasickness by obtunding drugs is not practical or advisable.

4. No time like the present may ever again be offered to try this method on a large scale, under army discipline and medical supervision.

TREATMENT OF THE TWO COMMONEST SEQUELÆ OF LABOR AND THE TWO MOST FREQUENT DISEASES OF WOMEN.

HIRST, in the *New York Medical Journal* of April 26, 1919, states that it is plainly the duty of the general physician to limit in number and extent the injuries of labor by its proper management and to detect and completely repair those that do occur; also to prevent or to detect and to correct without delay retrodisplacements of the uterus, thus eliminating sixty per cent of the diseases of women.

How shall it be done? If a physician in general practice were asked this question he would probably reply in regard to the detection and repair of injuries that an examination should be made immediately after labor; that the injuries thus discovered should be immediately sutured. Such has been the usual practice for at least a generation. What is the result? He still finds in his office and dispensary patients the same old fifty per cent of injured genital canals, and in the former class, office patients in good circumstances, the women have been practically all primarily repaired. In regard to the uterine displacements following labor he finds the general practitioner usually gives the matter no attention at all. Something is wrong, therefore, with the methods so long in vogue.

This is the advice the general physician should receive from the specialist: Do not attempt to make an accurate diagnosis of injuries directly after labor; postpone the examination for three to five days; when the distortion of the tissues has disappeared and the bloody discharge has diminished, with a good light and a proper posture of the patient a really accurate diagnosis can be made. Hirst says he cannot make it otherwise than after many years' practice and with ample clinical experience. He does not believe that the general physician without any special training and facilities can do so.

After an accurate diagnosis is made a thorough repair is next in order at any time after the fifth day. He means by a thorough repair the restoration of the cervix, anterior vaginal wall, posterior vaginal wall and pelvic floor, to the normal condition of a nulliparous woman, a "restitutio ad integram." Many objections can be urged against this advice. He is aware of them all, but none of them are insuperable. And how else can the desired result be obtained?

He wishes that some one would tell him a better way; if none can be found, is it not preferable to face the difficulties of the situation resolutely; to learn how to do this work properly, to provide oneself with the necessary implements; and to educate the public to an appreciation of the advantages of a thorough restoration to a normal condition after labor?

In regard to the prevention of a chronic retroversion of the uterus, there is not the

same room for difference of opinion and the problem is a simpler one. Every woman should be examined three weeks after labor to determine the position of the uterus. If it is displaced a bimanual reposition should be carried out. But whether it is in place or not every woman should be instructed to assume the knee-chest posture twice a day for five minutes for the last three weeks of the conventional six weeks of puerperal convalescence.

Polak, of Brooklyn, who makes his patients perform the kangaroo walk with the same idea in mind, writes that he had reduced the number of retrodisplacements after labor in his clinic to three per cent. Hirst has tried this kangeroo walk, and although he keeps himself in good condition by constant physical training he finds it an athletic feat of some difficulty. He thinks that the correct assumption of the knee-chest posture is more practical, and he believes it to be quite as effective.

If at the end of six weeks the uterus is still retroverted, there is a choice of two procedures dependent upon the social status of the patient. The poor working woman should be advised to have an operation, and the one selected should not only make her well but keep her well in spite of subsequent childbearing, which most of the operations advocated for this purpose will not do. A woman of the leisure class should be treated differently. After reposition of the uterus a pessary may be inserted and the patient put under the charge of an expert in massage and Swedish movements for eight weeks. The pessary is then removed. If examinations at intervals for the next two months show that the uterus remains in good position the patient is discharged, cured. If the retroversion recurs the patient is advised to have a permanent cure by operation, or, if she demands it, the temporary use of a pessary may be substituted, till she can make up her mind to undergo the operation.

It will be some time before the methods here advocated or others with the same purpose are generally adopted and efficiently carried out. Meanwhile there will be a steady accretion to the already enormous number of cases now demanding surgical treatment. Consequently no one dealing with this subject can ignore the inquiry as to the best technical procedure to correct these two consequences of labor. Moreover, this knowledge will always be essential to a successful management of such cases primarily.

Hirst therefore submits some suggestions under this head. The commonest of all the injuries of labor is laceration of the pelvic floor. Its repair constitutes numerically fifty per cent of a gynecological surgeon's work. And yet there is no operation that he has observed in special or general surgical clinics that seems to him to be so incorrectly performed. It will be acknowledged, he thinks, that the indispensable requisites for the proper performance of this operation are a knowledge of what happened to the woman in labor, a familiarity with the anatomy of the region, and a technique that will restore each injured structure to its original condition. If this test is applied to what may be observed in most clinics he thinks it would be agreed that there is room for improvement. In fact, after observing this work in many places here and abroad he was obliged to devise an operative technique of his own.

Next in frequency to injuries of the pelvic floor come injuries of the anterior wall and of the supports of the bladder. These injuries are complex in nature but are now well understood. They are a diastasis of the fascial plate between the vagina and bladder; an elongation or rupture of the longitudinal fascial fibers derived from the ureterovesical ligament, and the cardinal ligaments in the bases of the broad ligaments; a rupture of the muscle and fascia of the urogenital trigonum, or, to use an anatomical term with which we are more familiar, the compressor urethræ; and the rupture of this muscle between the layers of the triangular ligament. It is only the last named injury that can be repaired

by a simple technique during the puerperium. The others can be prevented by the proper conduct of labor.

Finally no reference need be made to the technique of cervical repairs. There is no difference of opinion on this point. But it may not be generally known that the collective experience of several clinics has demonstrated that these repairs cannot be safely made till after the fifth day of the puerperium.

The next matter on which an agreement should be reached is the best technique for the surgical cure of retroversion, for surely there must be one better than the rest, and we all know that at least fifty-one operations have been proposed for this purpose. Here again progress has been delayed by the type of gynecologist already referred to and by the general surgeon, neither one of whom has any interest in nor a practical acquaintance with the chief physiological act of a woman's life, the process of generation.

Obviously the end to be obtained by this operation is to maintain the uterus in a normal position permanently in spite of subsequent pregnancies and labors, and to do nothing that will complicate these processes.

ON THE EFFECT OF ANTIPYRETICS ON THE HEARING.

In the *American Journal of Physiology* for June, 1919, MACHET, GREENBERG and ISAACS tell us of the effect of a large number of antipyretic drugs and their combinations on the hearing of normal human subjects. The following drugs were utilized: acetanilid, acetphenetidin, pyramidon, antipyrin, lactophenin, melubrin, salol, aspirin, sodium salicylate, and quinine. The following combinations were also studied: acetanilid plus sodium bicarbonate, acetanilid plus salol, acetphenetidin plus salol, antipyrin plus aspirin, antipyrin plus salol, acetanilid plus acetphenetidin, aspirin plus salol, and some others. It was found that some antipyretics decrease the acuity of hearing, while others increase it, and that certain combinations produce unexpected synergistic effects. Among the most interesting findings are the following:

Acetanilid, aspirin and salol each markedly decrease the acuity of hearing. Antipyrin, pyramidon and acetphenetidin all tend to render the hearing more acute. A combination of acetanilid with salol instead of decreasing the hearing actually renders it more acute. A very interesting observation is the one concerning the combination of acetanilid with sodium bicarbonate. It was found that while acetanilid definitely decreases the hearing, when given alone, and while sodium bicarbonate produces no change in the acuity of hearing when administered by itself, a combination of acetanilid with sodium bicarbonte actually increases the distance limit of hearing in the same subjects. Some experiments have been made with the object of explaining the latter phenomenon. The complete data will be published in the *Journal of Psychobiology*.

THE ANTISCORBUTIC PROPERTY OF FRUITS.

GIVENS and MCCLUGAGE, in the *American Journal of Diseases of Children* for July, 1919, state that the evidence is to the effect that orange juice can be dried so that it retains a significant amount of antiscorbutic vitamin. The most satisfactory process for drying orange juice is the one in which the temperature of drying is not unduly high and the duration of drying is very short. If orange juice is submitted to a temperature of from 55° to 60° C. for forty hours or more, a part of the antiscorbutic vitamin is destroyed. The dried orange juice investigated by them was active after three months' storage. Whether it will retain its potency for an indefinite period remains to be determined.

By desiccation of orange juice it is possible to save a large amount of fruit hitherto wasted. Through such conservation of a waste product, it ought to be possible to

establish a price on dried orange juice which is within the reach of a great many people who cannot at present afford fresh fruit.

It is suggested that the dried orange juice will serve as a convenient antiscorbutic for use in infant feeding, on polar expeditions, in the navy, and for soldiers during war.

INFECTIOUS ARTHRITIS OF UROGENITAL FOCAL ORIGIN.

MICHEL, in the *New York Medical Journal* of June 28, 1919, states it is of course reasonable to suppose that if we could destroy the focal site we could master the disease. The local treatment is entirely dependent upon the nature of the bacteria and the site of the lesion—that is, the site of the retention foci. If localized in the glandular apparatus of the anterior urethra or, in the female, in Skene's or Bartholin's glands, it is necessary to destroy these sites by means of galvanocautery, electrolysis, or fulguration.

If the retention foci are in the posterior urethra, prostate, or seminal vesicles, these sites must be attacked—however, Michel states that he does not think favorably of the radical operation of seminal vesiculotomy. The postoperative results are not comparable to the conservative non-operative procedures, and the resulting destruction, in many cases, of procreative function, not to speak of the frequent failures obtained, should compel very serious consideration before resorting to this operation. He personally has not seen a case that justified this operative procedure in view of the results obtained by the conservative means of attacking the infection.

The conservative measures of draining the pus from the prostate and vesicles by means of proper massage and posterior irrigations, direct heat through psychrosphore, diathermy, dilatations, intraurethral endoscopic applications of the knife, galvanocautery, electrolysis, or fulguration, and injections directly into the vas, are all means which if properly applied will overcome the infection. Attention is called to the reports of intraprostatic injections with what Townsend calls a normal phenol serum with excellent results in posterior gonorrheal complications. This method was tried at Frank's Clinic in Berlin some years ago and discarded. Michel has had no experience with it. In those cases in which the verumontanum was at fault he has obtained good results from treatment applied with the object of removing this inflammation of the posterior urethra. Wherever the lesion is located in the urological tract and whatever the bacteria, we must seek to remove them. These local measures are used in combination with the constitutional or systemic means to combat these complications of urethral infections caused by the gonococcus and other bacteria infesting this tract.

The intramuscular injections of the specific vaccines, which at times gave brilliant results, have been on the whole disappointing in infectious arthritis of gonorrheal origin. However, Michel has entirely discarded the intramuscular for the intravenous route in the introduction of these specific vaccines. While the reactions were severe (chills, vomiting, intense aches in muscles and bones), the end results were vastly better; however, there were many cases in which Michel could not control the acute pains without the use of opiates. It has been his good fortune while experimenting with the non-specific proteins to have better results than with the specific vaccines. He has adopted the suggestion of Maurice Packard and changed his protein body to that of the typhoid bacillus. The results are practically specific against the infectious arthritis. The severe pain is controlled within three to twelve hours. The reactions are severe and the utmost care is required in the introduction of these agents. However, the results are in direct proportion to the reaction—the more severe the reaction the better the result, when the bounds of safety are not overstepped.

He concludes that infectious arthritis of urogenital foci can result from any bacteria

in the urogenital tract. Gonorrheal arthritis may result from anterior as well as posterior urethral infections. The polyarticular variety of arthritis is more frequent than monarticular arthritis. The larger joints are more frequently involved than the smaller ones in gonorrheal arthritis. Spurs of the os calcis are rarely the result of gonorrheal infections. Non-specific proteins introduced intravenously are specific for acute infectious arthritis.

CALCIUM CHLORIDE AS A PALLIATIVE AGENT IN THE TREATMENT OF INTESTINAL TUBERCULOSIS.

FISHBERG, in the *Journal of the American Medical Association* of June 28, 1919, states that on carefully analyzing the cases in which this mode of treatment has been tried, it appears that the calcium chloride is effective only in cases of early intestinal tuberculosis. When the diarrhea has continued only a few weeks it may be checked much better than with any medication or dietetic changes hitherto practiced. In such cases even the abdominal pains may be removed by calcium chloride. In cases in which the diarrhea and pains have been present for several weeks, repeated injections of calcium chloride may reduce slightly the frequency of the stools, but no amelioration is noted in the abdominal pain. It also appears that in cases in which there are symptoms and signs of amyloidosis, enlarged liver, polyuria, etc., the intestinal symptoms are not relieved by the treatment. It may be safe to make the following generalization: When the diarrhea in a tuberculous patient is due to dietetic indiscretions, to the catarrhal condition of the intestinal mucous membrane, or to slight intestinal ulceration, an intravenous injection of 5 Cc. of a 5-per-cent solution of calcium chloride will give prompt relief. When, however, the intestinal symptoms are due to extensive ulcerations—especially to amyloid infiltration of the intestine—the chances of attaining relief of the pain and annoying diarrhea are remote. Similarly, when the abdominal pains are due to irritation of the intestinal mucous membrane by the contents of the intestine, relief may be attained by intravenous injection of calcium chloride. When, however, the pains are due to localized peritonitis over deep intestinal ulcers, or to peritoneal adhesions, which are not uncommon in tuberculous subjects, calcium chloride is impotent to give relief.

The mode of action of calcium chloride in these cases can only be surmised in the present state of our knowledge of its physiological action and pharmacology. We cannot explain it on the theory of lime starvation, which is said to be a strong etiologic factor in tuberculosis, because the administration of calcium chloride has no influence on the other symptoms of phthisis. On the other hand, Loeb found that calcium salts stop contact irritability of muscle and the hypersensitiveness of the nervous system induced by various salts. It has also been found that calcium salts impede and even stop completely intestinal peristalsis; at times they even counteract the action of certain laxative drugs.

TREATMENT OF ACUTE PROCTITIS.

DRUECK, in the *Medical Fortnightly* of June 15, 1919, in the course of quite a long article, states that the first indication for treatment naturally is to remove the cause. Impacted feces or foreign bodies must be removed carefully so as not to injure the mucous membrane. The anal sphincters should be dilated, to permit easy and free emptying of the rectum. Decomposed irritating infectious intestinal contents should be removed by means of a saline cathartic, which should be taken in sufficient doses to produce watery stools and a free flushing. After the bowel has been thoroughly emptied it should be irrigated two or three times during the day with physiologic salt solution at 110° Fahr.

For this irrigation the patient should be placed in the lateral prone position, with the hips elevated; the irrigator-reservoir being held one and one-half or two feet above the body. The irrigator tip should

have a large return flow to allow free exit of débris. The solution is allowed to run into the bowel at a slow rate until one pint has been received. Less should be injected at a time if it is uncomfortable to the patient. Never overfill the bowel or cause the patient cramps. Douching in this manner washes out a large amount of infectious material, such as secretions, fecal accumulations, and multitudes of microorganisms; it dissolves mucus and pus, flushing them out as shreds; also it contracts the vascular structures, thereby stimulating circulation, relieving the local congestion, and depleting the tissues.

Following the douche about 2 drachms of astringent antiseptics or other medicinal mixture is injected and the patient instructed to retain it, a 1:5000 silver nitrate solution being the most reliable. If the pain and tenesmus are not relieved, a half-grain opium suppository may be inserted. These flushings are to be continued as long as there is any discharge of mucus or pus. Enemas cannot be substituted for the irrigation, as they increase the tenesmus.

If the symptoms continue after the third day under this treatment it will be found there are ulcers on the rectal wall, and these then must be treated locally. The patient is placed in the knee-chest position (which secures atmospheric dilatation); then a speculum is introduced and the entire rectum inspected. Any ulcer present is wiped free of mucus and débris and painted with pure ichthyol or a 5-per-cent silver nitrate solution.

PREMATURE SEPARATION OF THE PLACENTA.

Appleton, in the *Boston Medical and Surgical Journal* of June 26, 1919, states that whenever premature detachment of the placenta is diagnosed, it is a situation that demands active measures of treatment. This means as rapid delivery of the patient as is consistent with her condition and environment. In order to accomplish this there must usually be some sort of operative interference, and here is where sane judgment is so important. Naturally, excluding other factors, the average operator will select those methods in which he is most skilful. Generally the operation of choice is manual dilatation of the cervix followed either by high forceps or version and breech extraction. Manual dilatation means shock, and methods of combating it must be at hand. Naturally the dilatation should be slow, being careful to minimize as far as possible the shock. High forceps is not only difficult but always dangerous, even in the most skilled hands, and version has the same characteristics.

Should a positive diagnosis of fetal death be made, a destructive operation would probably give the best results in saving the mother.

Cæsarian section, while theoretically an appropriate way out of the difficulty, is in many cases contraindicated. The patient, who is bleeding, anemic, and in more or less shock, is a poor operative risk, to say nothing of the fact that previous vaginal examination should prevent Cæsarian section on account of the great danger of infection.

Slow dilatation of the cervix with the Voorhees bag is a relatively safe but slow method. Appleton does not favor it in any case in which there is hemorrhage, because one is inclined to get an impression of false security from the fact that, after introduction of the bag, bleeding is no longer visible.

Simple rupture of the membranes may facilitate and hasten labor if the cervix is well dilated, but the rapid evacuation of amniotic fluid may result in a further loosening of the placenta. Of course where the cervix is already well dilated, operative and rapid delivery is easy and relatively safe.

Any method of relatively rapid delivery is then the appropriate treatment, after the method which under the individual circumstances seems wisest and safest, but a word of warning is apropos to the effect that here is one of the many cases in which one must treat the patient, not the disease. Oftentimes it would be advisable to react

the mother from shock, give stimulants, and intravenous salt solution, or better, transfusion, previous to any operative method. In nine cases out of ten the child's life is already or must be sacrificed in order to save the mother.

Whatever the immediate treatment, one must provide for the supplementary treatment after delivery. If born alive, the baby will be in pallid asphyxia, and very strenuous measures should be at hand for resuscitation. This means that a skilled consultant is almost a necessity, for one must simultaneously care for the mother, who may be in shock, or may have a fatal postpartum hemorrhage. Postpartum bleeding is common in these cases, and will frequently require packing of the uterus, for one must remember that there must already have been considerable loss of blood, and only a few ounces unnecessarily lost after birth may turn the balance against the mother's recovery.

In conclusion he emphasizes the seriousness of the condition and the necessity for its recognition.

Premature detachment of the placenta stands out as an all-important cause of both fetal and maternal mortality in childbirth, and it is probable that it occurs much more often than we suppose. Progress is made in recognizing and eliminating such dangers and in aiding nature safely to consummate what should be a normal physiological process.

THE RAPID CONSTRUCTION OF LIVER CELL PROTEIN ON A STRICT CARBOHYDRATE DIET CONTRASTED WITH FASTING.

DAVIS, HALL and WHIPPLE, in the *Archives of Internal Medicine* for June, 1919, state that the curve of urinary nitrogen excretion of a dog makes a sudden rise after chloroform injury. The actual amount of nitrogen eliminated following injury is greater in a fasting than in a sugar-fed animal. Furthermore, the curve of excretion often remains well above the starvation metabolism base line if fasting is continued after chloroform anesthesia. If sugar is given the curve immediately falls even below the pre-anesthetic base line.

Liver repair is much more rapid and complete on a sugar or high carbohydrate diet than it is on starvation. In fact, an injury of one-half of each liver lobule may be completely repaired in nine days on a sugar diet, but only 50 per cent repaired under fasting conditions.

This is convincing evidence that the "protein-sparing action of carbohydrate" in this instance is a true conservation of protein split products. This evidence cannot be explained as protein-sparing at the source or as simple inhibition of protein autolysis or catabolism.

It is suggested that the liver may be the place in which this union of carbohydrate and protein split products may be made permanent, whether the resultant products are to be used in the liver or elsewhere in the body.

OBSERVATIONS ON A TRANSIENT FORM OF HEMOGLOBINURIA.

PARSONS and FORBES, in the *Journal of the Royal Army Medical Corps* for May, 1919, state that all their patients in Serbia were treated at the commencement of their illness as if suffering from severe blackwater fever, but when it was seen that the case was a transient one, treatment was modified accordingly. Warmth, absolute rest in bed, administration of saline aperients and copious drinks of lemon water, barley water, soda water, etc., were ordered. The only food allowed was milk, and patients were encouraged to take at least five pints of fluids in the twenty hours; some indeed drank as much as eight pints in that period. Some of the cases received rectal salines, five ounces of normal saline being given every two hours, or ten ounces every four hours. These were, however, stopped in the course of a few hours when it became obvious that the case was a transient one.

At the end of forty-eight hours the strict milk dietary was relaxed and milk pudding,

bread and milk, jelly, etc., were allowed. The diet was further increased *pari passu* with the improvement in the urinary symptoms, which usually cleared up so rapidly that the patient soon reached a full diet.

Quinine was given, not as a routine measure, but only if evidence of active malarial infection was shown, either by finding parasites in the blood or by the development of malarial symptoms following on, or in addition to, the hemoglobinuria. When quinine is necessary it is perhaps best administered intramuscularly, but it has also been given either by the mouth or occasionally by the rectum, five grains being added to each rectal saline. Quinine sulphate has been given by the mouth and the bihydrochloride by the two other methods.

Quinine amblyopia is stated to be more common in blackwater fever than in malaria, and therefore it has been recommended that great care be taken in determining the dosage of quinine in this disease; whilst not disputing this point they think that some of the visual symptoms may have been due to retinal hemorrhages, such as have been observed in certain of their cases by one of their colleagues. During the hemoglobinuria they have not given more than forty-five grains in the twenty-four hours, but in the relapses of convalescence they have given sixty grains daily, and in one case of a severe relapse seventy grains a day were given on two successive days.

During convalescence a generous diet was ordered and iron and arsenic given. The period of convalescent treatment was continued for a longer period than for an ordinary malarial attack. The period of absolute rest in bed should be about ten days; some of their cases, however, were up before that length of time had expired, because it is almost impossible to keep a Serb patient in bed when he is feeling anything approaching well.

As previously stated, malarial relapses occurred during convalescence in nearly all the cases and were treated as ordinary malarial attacks.

A careful watch should be kept on the urine during these relapses on account of the possible recurrence of hemoglobinuria. All cases after recovery from an attack should be removed from a blackwater fever area, and if possible evacuated, owing to the risk of recurring and more severe attacks of blackwater fever.

The prognosis of the actual attack of transient hemoglobinuria is invariably good; indeed, as stated above, the symptoms may be quite trivial, and most cases would recover even if no treatment were received. The outlook, however, may be grave in a patient already seriously debilitated by previous malaria or dysentery. In the only case in their series which gave them any anxiety, there was marked debility from recent malaria and dysentery at the time the hemoglobinuria occurred; after three days, however, the patient made a rapid improvement and was soon out of danger.

As for their future prognosis, they believe that those cases are liable to recurrences of hemoglobinuria, especially if they remain exposed to malarial infection. Moreover, in all probability these recurrences will prove more severe than the original attack. Judging from the cases they have seen, no permanent damage is done to the kidneys by these transient attacks.

THE ETIOLOGY AND PROPHYLAXIS OF RELAPSE IN MORPHINISM.

PEARSON, in the *Medical Record* of June 21, 1919, states a thing that has a great bearing upon the convalescence of morphinism, in the pathology of this disease, is the fact that in the case of the addict sleep is always pure in quality and very often in quantity. The addict is prone to retire very late at night, in extreme cases not until morning. If he has work to do this abridges the quantity of sleep. But even if he gets the right number of hours there is but little refreshment in it. So when at last the drug is withdrawn, the addict is in an exhausted condition. Morphine enables one to draw upon his reserve bank account of nervous

energy. The normal person cannot do this except under great stimulus; it is like fighting a fire all night after a hard day's work. So when at last the false stimulant is gone, the addict has not much push left, and he is in no shape to attempt any physical or mental strain.

Now as to the use of hypnotics during convalescence, it is not best for the patient to become anxious about the hours of sleep, for if he gets one hour of natural it is better than a number of hours of drugged sleep. There are only two drugs (neither one is thought to be a hypnotic) that he knows of that can be used safely as sleep producers. One is a small dose of pilocarpine at bedtime and the other is small doses of apomorphine (gr. 1/120 to gr. 1/40) every four hours. Chloral, paraldehyde, medinal, barbital, sulphonal, trional, etc., are worse than useless, for they predispose to relapse; they are, indeed, every whit as effective as a cause of relapse as whisky.

On account of the prolonged interference with both the quality and quantity of sleep the convalescent has no reserve bank account of reserve nervous force to draw upon.

There are, however, two other factors of the pathology that bring about much the same condition, and this is the fact that all the cells of the body, in addition to being fatigued, are both partially starved and poisoned—starved because of the interference with the appetite and with metabolism; poisoned both by the direct effect of the drug and by the retained toxins, that accumulate because excretion and elimination are interfered with.

This gives a clear-cut idea of the physical therapeutic needs. A thorough building-up process is needed. The convalescent must digest many a good meal, must enjoy many nights of normal sleep, before his exhausted bank account of reserve nervous force is restored.

Fresh air both day and night is as beneficial in the convalescence of morphinism as in tuberculosis.

Having pointed out the clear indications he says no more as to the building-up process. Each physician can make use of such means as seem good to him. Drugs have but little place in this building-up process; they can do but little good at best. It is psychologically far better for the convalescent to learn that rest and outdoor recreation is all that is needed.

ECZEMA FROM A DERMATOLOGICAL VIEW-POINT.

MacKee, in the *Archives of Pediatrics* for April, 1919, states in regard to the treatment of eczema, one should first endeavor to interpret the cutaneous symptoms. It is of the utmost importance to search for evidence of external causation—that is, an external factor that is operating alone or one that is working in collaboration with some internal disturbance. If an external cause cannot be determined, then the patient should be investigated as to the various internal factors, and if any are found they should of course be eliminated if possible. The principles of local treatment are about as follows:

1. *Acute Eczema.*—Soothing remedies such as zinc oxide or zinc stearate, starch, etc. If the dermatitis is dry, ointments or powders may be employed. Ointments, however, should never be used where there is an exudate. Such a simple and non-irritating application as boracic acid ointment applied to an exudative surface may enhance the inflammation and cause the dermatitis to spread. The explanation is that the grease of an ointment interferes with drainage. It becomes elevated by the discharge so that it can have no beneficial influence on the inflamed surface; it prevents evaporation; and, furthermore, the discharge, by spreading under the ointment, comes in contact with normal skin and the eruption spreads by autoinoculation. Powders are objectionable because they combine with the exudate and form crusts that are difficult to remove. If the exudation is slight, a paste will suffice. A paste differs from an ointment in containing a very large

percentage of starch which soaks up a small amount of exudate. If the exudate is large in amount, a wet dressing is preferable.

2. *Subacute and Chronic Eczema.*—Stimulating remedies such as tar, mercury, sulphur, iodine, salicylic acid, chrysarobin, benzoic acid, resorcin, etc., are indicated. The strength will depend upon the character of the eruption. It is advisable always to begin with mild ointments in order to test the susceptibility of the patient.

Both acute and chronic eczema require applications possessing antipruritic qualities. Probably the best cutaneous antipruritic is carbolic acid. It is the opium of the skin. Other valuable antipruritics for acute eczema are menthol, camphor, chloral hydrate, anesthesin, and lead and opium wash; for chronic eczema, in addition to the drugs mentioned, oil of cade, sulphur, resorcin, and betanaphthol.

ETIOLOGY AND TREATMENT OF THE DIARRHEAL DISEASES OF INFANCY.

HILL, in the *Journal of the American Medical Association* of June 7, 1919, states that no raw fruit or vegetables should be given to children under five years of age, and care should be taken that all food ingested be in a finely divided form. Overfeeding should be carefully avoided in hot weather, especially overfeeding with sugar. It is always good practice during a hot spell to dilute the baby's milk one-third with water. Overclothing the baby is also to be avoided, and frequent bathing, avoidance of the sun, and providing him with water to drink between the feedings are all important. In the southern part of this country, during the summer, all milk fed to babies, no matter how clean it is, should be boiled. An ounce of orange juice daily will prevent scurvy.

In cooler parts of the country, during the hot weather, all milk should be boiled with the exception of certified milk, which can be given raw; but during very hot, sultry spells this should be boiled also.

There is really no valid argument against using boiled milk in the summer-time. The only possible harm it can do is to produce scurvy. But we know that comparatively few babies who are fed on fresh boiled milk develop scurvy, and orange juice is practically certain as a prophylactic. Undoubtedly nature intended babies to have raw milk, but the dangers of unclean raw milk so greatly outweigh those of boiled milk, especially in the summer, that more and more physicians are ordering boiled milk as a routine, and it is the duty of us all to educate the laity as to the dangers of raw milk in hot weather.

LIVER REGENERATION FOLLOWING CHLOROFORM INJURY AS INFLUENCED BY VARIOUS DIETS.

DAVIS and WHIPPLE, in the *Archives of Internal Medicine* for June, 1919, state that a diet of bread and skim milk gives the optimum repair following a unit chloroform liver necrosis. A similar reaction is to be expected with any mixed diet rich in carbohydrate. A liver necrosis involving the central one-half of every lobule (50 per cent of all liver parenchyma) will usually be completely repaired in from seven to nine days.

A diet of cooked skeletal muscle is not as favorable for rapid liver repair as the rich carbohydrate diet.

A diet of cooked liver or kidney is more favorable for rapid liver repair than a meat diet. This diet of parenchymatous organ tissue approximates the rich carbohydrate diet in efficiency of liver repair.

Beef extract given alone does not favor liver repair, which indicates that meat extractives are not particularly concerned in the reaction of liver repair.

Thyroid powder given in large doses with no food does not stimulate liver repair, but does accelerate tissue catabolism and increase nitrogen elimination. This accelerated catabolism may even impede the liver repair which is to be expected in starvation.

Brain feeding is favorable to liver regeneration and repair. This diet approximates

lean meat feeding in its favorable influence on liver repair. In this respect the brain diet stands in marked contrast to the fat diets.

Fat diets (vegetable oils, butter, lard, beef fat, etc.) do not aid in liver regeneration. The same repair is to be observed during fasting control periods. The fat diet can spare the proteins of the animal at the source, but cannot act in conservation of protein material by taking an active part in reconstruction of new protein substances.

COMMON GYNECOLOGIC ERRORS.

ECHOLS, in the *Wisconsin Medical Journal* for June, 1919, states that the routine curetting of the uterus after abortions, irrespective of definite indications, is now almost universally condemned. Yet it is surprising to find that this questionable practice is still adhered to by a considerable number of physicians. There is a large class of foreign-born patients who after spontaneous abortion will invariably say, "Doctor, don't I need a cleaning?" By "cleaning," they mean a curettage. He has had the greatest difficulty in convincing some of these patients that they do not need a "cleaning" as they call it. Their attitude shows conclusively that they have come to look upon a postabortive curettage as good practice. The doctor who curettes routinely in such cases often justifies his action by producing half a handful decidua, which he displays, labeled Exhibit "A," under the mistaken designation of membranes and fragments of placenta. This decidua is present of course in every case, but is no justification for meddlesome scraping. Watkins has sufficiently demonstrated that the puerperal uterus which will not empty itself satisfactorily is the rare exception and not the rule.

Likewise in puerperal patients with high fever and tympanites, there is too much intrauterine meddling. The enthusiasts who hope to disinfect the uterus by means of Dakin's or other solution forget that only the superficial bacteria can thus be destroyed. More of these patients will get well under expectant than under operative treatment.

Regarding vesicovaginal fistula, produced as an accident to delivery, Echols is convinced that operative cure is sometimes undertaken too hastily. A large proportion of these fistulæ, if not too large, will heal spontaneously after a few weeks.

Too many operations are done to relieve sterility in women without sufficient preliminary investigation as to the probable cause of the sterility. These investigations should determine at least two facts: first, the character and amount of the so-called vaginal secretion; and second, whether actively motile spermatozoa are present in the vagina within an hour after coitus. These two conditions can be determined by any physician who is willing to take the necessary time and pains to investigate.

Among the sins of omission on the part of the surgeon is the failure to palpate the gall-bladder and ducts, kidneys, and appendix, which should be done in the course of practically all ordinary abdominal operations where a midline incision is made. Of course, exceptions are to be made in the case of acute conditions where such extensive exploration might spread infection. This criticism is less to the point now, he believes, than it would have been a few years ago.

Regarding chronic gonorrheal infections in women, two classes of mistakes are quite commonly made:

First, it is an error to assume that a woman has not had gonorrheal infections merely because we cannot elicit any history of an acute attack. When a man has an attack of gonorrhea he is sure to know about it; but it frequently happens that a woman may have contracted the disease without being aware of it.

Secondly, it is a mistake to say that a woman does not have chronic gonorrhea merely because one or two microscopic examinations prove negative. Because of this fact, all the attempts formerly made to control venereal disease among prostitutes

in the larger American and European cities by means of periodic examinations by city health authorities were doomed to failure.

As to the diagnosis of ectopic pregnancy, mistakes will probably always be common. This is due in part to the relative rarity of the condition, which prevents the average physician from seeing more than a few cases in a lifetime, and in part to the inherent difficulties in the diagnosis of those cases which are not in the stage of an acute internal hemorrhage. However there are two classes of mistakes which occur so repeatedly as to deserve mention in this paper:

First, the mistaking of tubal pregnancy, with its history of one or more missed periods and metrorrhagia, for threatened or incomplete abortion. In a report of thirty-seven cases of ectopic pregnancy which Echols read before the Wisconsin Medical Society two years ago, he stated that nearly fifty per cent of them had been diagnosed as cases of ordinary abortion, and many of them had been curetted, without any relief of the symptoms.

The second class of errors in this connection is one which is apt to be made by a doctor who has had one or two sad experiences with ectopic pregnancy. The doctor who has once been caught napping and failed to recognize a ruptured tube is often sharply on the lookout for other similar cases, with the result that he diagnoses cases of threatened abortion as extra-uterine pregnancy. Echols has repeatedly been called in on cases of alleged tubal pregnancy, only to find that the pregnancy was intrauterine. Parenthetically it may be said that the doctor who errs in this direction is a much safer one from the patient's point of view than the doctor who lets his patient bleed dangerously without even suspecting a pregnancy in the tube.

A mistake that is commonly made in the examination of a patient to determine the degree of cystocele and prolapsus uteri, is to make the examination with patient on the table, and without also examining her in the standing position. Cystocele and prolapsus uteri are merely forms of hernia. In examining a candidate for military service, who among us would test the inguinal canals with the patient lying on the table? One should have the young man stand erect and perhaps on tiptoe, and then ask him to cough. So, in testing the bladder and uterus for prolapse, it is just as important to have the woman stand during at least a part of the examination as it is to have the patient stand in testing for inguinal hernia.

It is to be deplored that hysterectomy is too often done for prolapse of the uterus, especially in women past the menopause. Too often the surgeon reasons that the uterus is no longer of any use and therefore might as well come out, forgetting that the uterus in an elderly woman is generally a small atrophic affair, perhaps weighing not much more than an ounce. The weight of the organ in such a case cannot be considered even a contributory factor in producing the prolapse. It is always better surgery to preserve the uterus in cases of prolapse, and make use of it in one of the many plastic procedures for the cure of the hernia of bladder and uterus.

It is a mistake to consider every woman with a retroverted uterus and first-degree prolapse as a candidate for operation, especially if the retroverted uterus is replaceable by manipulation. Echols is convinced that pessaries are not used in such cases as often as they should be. Personally he uses them ten times as much as he did a few years ago. This advice is particularly applicable in the case of younger married women who expect to have, or will probably have, future pregnancies.

To caution against the neglect of irregular bleeding near the menopause would seem like repeating a trite and threadbare warning, and yet the number of malignant conditions of the uterus that continue to develop to an inoperable state from this form of neglect reminds us that the medical profession as well as the public still needs more education along this line.

There is a tendency among some mem-

bers of our profession to undertake Cæsarian section without strictly legitimate indications. Not long since one of the younger surgeons of Wisconsin—a man who would resent being called a general practitioner or an obstetrician—said to Echols with evident complacency, "I did my seventeenth Cæsarian last week." He said to him, "Is that a confession, or a boast?" Without entering into a discussion as to the indications for Cæsarian section, it is permissible to observe that in order to prevent this operation from falling into disrepute, the indications for carrying it out ought to be more carefully scrutinized. When a doctor falls under suspicion of doing too many unnecessary Cæsarian operations, it seems to him that the hospital authorities where he does his work should insist on the same form of control as they would if he requested permission to do a so-called therapeutic abortion.

Too many hysterectomies for fibroid tumors are done in women under thirty-five years of age. This statement applies to those cases in which the tumors are circumscribed and can be easily enucleated without disturbing the menstrual or the child-bearing function. Myomectomy or enucleation of fibroids can in most cases easily be done without appreciable risk even when the tumors are multiple. It may be argued against this procedure that the tumors may recur. Experience shows that fibroids thus removed are not prone to recur after the age of thirty-five years; but when one does recur now and then, it can be removed if necessary by an operation no more serious than the first.

CLINICAL OBSERVATIONS ON THE 1918 INFLUENZA EPIDEMIC.

FAILL and FAIRER, in the *Practitioner* for June, 1919, state that the treatment is thoroughly unsatisfactory. Quinine, sodium salicylate, aspirin, and salicin were all tried, but, so far as they could judge, without the slightest effect, and their use has been discontinued. All patients on admission were given a brisk purge—calomel followed by sodium sulphate. They were then usually placed on a simple diaphoretic mixture sometimes combined with digitalis; a large linseed poultice relieved the pain and rawness in the chest very rapidly. The ward was large and airy, and as it extended the breadth of the ship, cross-ventilation was assured. Sponging for hyperpyrexia gave great relief and frequently insured sleep, but in some cases hypnotics were necessary. They have found paraldehyde the most generally useful hypnotic. It has, however, to be given in adequate doses.

NAUSEA AND VOMITING OF PREGNANCY.

The *Journal of the American Medical Association* of June 7, 1919, calls attention, in an editorial on this subject, to a group of symptoms affecting the pregnant woman and varying in severity from mild "morning sickness," through a range of more intense nausea, to the extreme of "pernicious vomiting," which present difficulties that are not always easy to combat. The theories advanced in explanation of the origin of these phenomena are unsatisfactory because most of these theories bear on symptoms that are at best only part of the possibilities presented by this particular type of nausea and vomiting. Acidosis, for example, which has been one of the explanations offered in the past, fails to account for the features observed in many instances. The hypothesis of "suboxidation" has not justified itself in attempting to explain these, as well as various other pathologic disturbances. The hypothetic poison has not been discovered. The alleged accumulation in the blood of nonmetabolized nitrogenous compounds, such as amino-acids, has not been substantiated. As recent writers have summarized the situation: "Neither from the point of view of cause or cure has any satisfactory solution of the problem of nausea and vomiting or pernicious vomiting been arrived at. Rest in bed, forced fluids, attention to

excreta, diet, and control of the nervous system by the use of mild and strong sedatives, appear to be the most commonly adopted procedure for this condition."

There are various indications that point to the dominance of some metabolic factor in the origin of both the mild and the severer types of the nausea and vomiting of pregnancy. The symptoms appear most frequently in the morning after refraining from food for some time. Moreover, the common simultaneous occurrence of a ketonuria is an added indication of a metabolic upset. This symptom is usually observed when the supply of actually utilized carbohydrates is low—for example, when sugars fail to be oxidized, as in diabetes. Shortage of physiologically available carbohydrate, usually expressed in the glycogen supply of the tissues, frequently leads to infiltration of the liver with fats. Present-day physiologic evidence points to this phenomenon as an indication of carbohydrate starvation in the body. Fat is not deposited in the liver while carbohydrates are still available. In the liver, says Lusk, there is an antagonism between glycogen deposit following carbohydrate ingestion and fat deposition.

Mottram has observed that in the pregnancy of ill-nourished animals, the liver may become overloaded with fat, just as is true in certain stages of inanition. In view of all these symptomatic similarities Duncan and Harding of McGill University Faculty of Medicine, Montreal, have argued that these two factors, pregnancy and a short period of hunger, might account for the periodicity of morning sickness, and that the metabolic factor here concerned is a temporary relative lack of glycogen in the liver. Such a condition, they add, leads to a fatty infiltration of that organ.

The obvious practical conclusion that follows from this hypothesis is to preserve or enrich the supply of available carbohydrate for the patient. This is by no means a new procedure. Despite the current indifference to such a plan, the Canadian investigators have given renewed consideration to it. They have endeavored, in cases of varying severity of nausea and vomiting in pregnancy, to correct the assumed deficiency of carbohydrate supply by administering glucose or lactose, but mainly the latter, and they have supplemented this by a high carbohydrate diet. Duncan and Harding insist that psychologic advantages are not responsible for the good results which they have observed after such treatment. The gratifying report of success in more than seventy cases furnishes a justification for calling attention anew to what is at least a simple procedure in dietotherapy.

VITAMINES.

HALLIBURTON in the *British Medical Journal* of May 10, 1919, states that the object of his article is not so much to indicate to the practitioner the elementary principles of our knowledge of the vitamines, for that could be accomplished by the perusal of any recent book on physiology or scientific dietetics, but to go a little further, as a result of reflection and study of the subject. An appreciation of the main fundamentals is, however, necessary to realize that the subject is one of the highest importance and has bearings beyond those that he has up to this time briefly summarized. It is perhaps not going too far to state that the underlying conceptions bid fair to have as far-reaching results as those which have followed a study of internal secretions, and all that another modern word ("hormone") has been instrumental in introducing into medical minds.

To label a disease by a specific name, beriberi, rickets, etc., and to fathom its cause, and lead us to a rational and successful treatment of the same, is no mean accomplishment, but what about those more numerous ailments to which it is impossible to give a name, so vague and puzzling are the symptoms they exhibit? May it not be that many so-called minor conditions of malnutrition may be due to

lack of vitamines, or to a deficiency in their supply? Although at present three vitamines have been brought into the light of investigation, who can say that the list is incomplete? It is more than probable that obscure and apparently trivial complaints may in the end also be found to be deficiency diseases. An obvious state of malnutrition in the infant may pass away, and yet it may leave its mark behind it and cause far-reaching results later in life. Take, for example, that curse of modern days—dental caries. Already, as has been shown, there are signs that this is just a condition, and that its cause is probably a deficiency (earlier in life) of a vitamine not very different from "fat-soluble A."

The subject is still in its infancy; we know a few main facts. How vast is our ignorance; how vast also would be our power to benefit humanity were this ignorance to be dispelled. Happily many workers are taking up the subject and exploring the numerous by-paths that the main idea has opened up. The most important work of this nature recently brought before the medical profession is that by McCarrison, already well known for his fruitful work on the thyroid gland. His paper is entitled "The Pathogenesis of Deficiency Disease," and appears in the current volume of the *Indian Journal of Medical Research* (January, 1919, vol. vi, pp. 275-355). A brief summary of his main conclusions was published in the *British Medical Journal* of February 15, 1919, p. 177, *et seq*. Considering the difficulties of research in an Indian provincial institute, Halliburton regards this article as a monument not only to the enthusiasm but also to the ability of one endowed with the capacity for real research work. The disease in particular McCarrison at present has dealt with is beriberi; this complaint can be produced easily in birds by withholding "water-soluble B," or, in other words, by feeding upon highly milled cereal grains. So far the nervous symptoms of this disease—spoken of as neuritic —have attracted most attention, so much so that the term "antineuritic vitamine" has been used as a synonym for water-soluble B. But McCarrison has shown that the condition is more than a functional and degenerative condition of the nervous system—that it is one in which practically every organ and tissue of the body is involved. The organs of digestion and assimilation are particularly affected, and thus many of the symptoms owe their existence to the chronic inanition so produced. The lowered vitality renders the body an easy prey to infectious and parasitic agents, and thus other symptoms become explicable. Among the many remarkable results chronicled is that while the adrenals hypertrophy there are other organs which atrophy, and in order of severity these are the thymus, the testes, spleen, ovary, pancreas, heart, liver, kidneys, stomach, thyroid, and the brain least.

It, therefore, appears that the organs which atrophy provide a reserve of vitamine for use in periods of stress; the reserve, however, is soon exhausted.

THE TREATMENT OF MALARIA.

ALPORT, in the *Journal of the Royal Army Medical Corps* for May, 1919, states:

1. That the successful treatment of malaria, either in the acute or chronic stage, depends upon the amount of quinine given and the method used to assure its absorption.

2. That the malignant tertian type, being less amenable to treatment, requires larger doses and a longer course of quinine treatment than other varieties.

3. That the state of the spleen (seen post mortem) makes it very evident that this condition will not clear up without vigorous and prolonged quinine treatment.

4. That it is necessary to saturate the system with quinine in order to have a sufficient quantity of the drug ready in the circulation: (*a*) To kill the young trophozoites, young schizonts and merozoites whenever sporulation takes place; this also

reduces the crescents by preventing their formation; (*b*) to neutralize the toxins.

5. That while the malarial parasite causes great blood destruction, the hemolytic effect of quinine is negligible. It should be noted that blackwater fever occurs only in malarial countries and in malarial subjects. And that although quinine may cause transitory hemoglobinuria in patients who have an idiosyncrasy toward quinine, in the same way that it causes a rash, still the condition is so rare that it is scarcely worth considering. Alport has failed to find evidence of a deleterious effect either on the leucocytes or the red blood-corpuscles in any case treated with the large doses of quinine advocated.

6. If malarial patients were treated vigorously with quinine in the early stage of the disease, no lives would be lost, and the percentage of chronic malarias with anemia and enlarged spleens requiring prolonged courses of treatment with quinine, arsenic, and galyl, would be reduced to within reasonable limits.

MANAGEMENT AND TREATMENT OF DELIRIUM TREMENS.

HAMILTON, in the *Alienist and Neurologist* for April, 1919, states that amongst the drugs used for sleeplessness we find bromides, chloral, hypnal (a combination of chloral and antipyrine), sulphonal, trional, veronal, chloralamide, morphine, and hyoscine. It has seemed to him that the bromides, while they have a tendency to quiet the motor symptoms, act very slowly; and while it is considered good practice to give bromide of potassium in fifteen- to thirty-grain doses, repeated in from two to six hours provided there are no contraindications, other medicines must be relied upon to give the patient sleep. Whisky will do more good in quieting tremor and will do it much more quickly, and hence bromides must be used as adjuvants only and not to the extreme which has been recommended by some authorities. He considers chloralamide the most reliable of the hypnotics in these cases. It certainly acts as a nervous sedative upon both brain and cord, and it is apparently without depressing effect upon heart action.

This opinion is corroborated by an editorial in an eastern journal stating: "In one case, for example, the drug proved to be perfectly safe when it was given to a man suffering from delirium tremens complicated with pulmonary congestion, a dilated heart, and marked multiple neuritis." Cushney says: "From blood-pressure experiments . . . it has little or no action upon the circulation except in poisonous doses. . . . On the whole it would seem to possess the cerebral action of chloral without producing its effects on the circulation." It should be given just before the retiring hour and in doses of twenty to forty grains. This should be dissolved in alcohol and some diluent such as syrup or elixir added, and as it is decomposed by hot liquids it should be given in a little water at ordinary temperature. If the patient is not asleep in two hours he should be given bromide, twenty to thirty grains, which may be repeated through the night from two to four hours apart. If this does not produce sleep, the patient should receive his whisky and nourishment each hour, but nothing further in the way of hypnotics until the next evening. At the usual retiring hour fifteen grains of veronal should be given dissolved in malted milk, and whisky and the bromides during the night as already advised unless the patient is sleeping.

Ransom and Scott in their investigation of about one thousand cases claim that "veronal is the only hypnotic which does not increase the mortality of the disease." If the patient is not asleep by one A.M. a ten-grain dose of trional can be given with malted milk and whisky, and usually this results in six or seven hours' sleep, from which the patient wakens next morning refreshed and generally quiet mentally, at least until evening, when there may be a slight return of the delirium. Through the daytime the patient is to be exercised, at intervals, but not to the point of undue

fatigue, and the third night another dose of the chloralamide may be given, or beginning about one P.M. sulphonal can be given in five-grain doses each hour until thirty or forty grains have been administered, the last dose of which should be not later than eight P.M. Sulphonal is absorbed slowly by the stomach, and frequently no effect will be obtained from it during the night if the physician waits until bedtime to administer it. It also maintains a certain hold-over effect, and it is not uncommon for the patient to sleep better the second night after its administration than he did the first.

Hamilton does not believe it safe in many cases to use chloral or hypnal, as there is a tendency toward exhaustion and they are contributory to heart failure, which is in all cases to be guarded against. Under forced feeding and the above treatment many of these cases will clear up in twenty-four to forty-eight hours. In some cases, however, the delirium may last five or six days, but he has never seen a case in which it lasted longer than six days. He knows many physicians use morphine as soon as the patient is visited, and use it in large doses. For the violence sometimes observed it may become necessary to use morphine, but if so the first dose should not exceed one-eighth of a grain, and it should be administered about four o'clock in the afternoon and the patient should be seen again in about four hours. The effects of the first dose should be carefully noted and the second dose regulated in size according to the judgment of the physician. He has seen some cases quiet down promptly from a small dose of morphine and others made much worse by either small or large doses, and, therefore, he seldom gives it; besides, it is not often needed. It constipates and, therefore, retards elimination, and certainly it would be contraindicated if the urine is albuminous. Some alcoholics are narcotized by small doses of morphine, and the patient may pass into a stupor followed by coma and death. Dr. Osler says: "Opium must be used cautiously. A special merit of Ware's work was the demonstration that on a rational or expectant treatment the percentage of recoveries was greater than with the indiscriminate use of sedatives which had been in vogue many years."

Hyoscine hydrobromide finds many advocates. In a few cases a dose of one-two-hundredth to one-hundredth of a grain acts like magic, but in many cases its well-known action in producing congestion of the brain intensifies the delirium and the patient is worse than before. It occasionally causes Cheyne-Stokes respiration. Hare says: "Hyoscine is valuable in a very limited class of cases, and in this class generally acts more favorably. These cases consist of those who, from acute mania, hysteria, or similar cause, suffer from insomnia and perhaps struggle violently against proper control or refuse to swallow or retain food. In some persons it utterly fails even in this particular type of cases." If it is used it should be given guardedly until its effects can be seen, and preferably in a small dose which can be repeated in two or three hours. It has little influence on the pulse and in some cases quiets tremor and leads to muscular relaxation and sleep. Some practitioners combine the hyoscine and morphine and claim to get better results therefrom. As already stated, Hamilton seldom finds it necessary to give either; the cases of suicide, injury, etc., due to the patient's becoming violent after the administration of hyoscine in the treatment of both alcoholism and morphinism are bringing it into disrepute, and undoubtedly its administration has in the past produced harm.

He has not mentioned paraldehyde because it has such a peculiar taste and is so likely to cause nausea, and in addition is very uncertain in its action. A warm bath, if the patient will enter it willingly and remain for any length of time, materially assists in quieting nerve irritability. Not infrequently patients go to sleep while in the bath, and if watched closely may be allowed to remain for some time even though sound asleep. After prolonged exercise, sponging the body with tepid water soothes and quiets and is helpful in obtain-

ing sleep. If this treatment is followed, heart failure will seldom be noted and the use of strychnine will be found unnecessary. If heart failure threatens it would call for strychnine in proper dosage, repeated as the judgment of the physician may indicate. Digitalis is slow in its action and cannot usually be relied upon to act quickly enough to be of service in these cases. In addition it is hard on the stomach, which is generally inflamed, and, therefore, should be given cautiously. Digitalone (P. D. & Co.) or digitalin may be administered hypodermically, and he has seen good results follow their use.

It is his experience that the majority of asthenic cases and those showing evidence of heart weakness result from the too rapid or sudden withdrawal of liquor and the lack of proper nourishment, although he can conceive of complications such as pneumonia, gastritis, myocarditis, etc., where the condition of the heart will need prompt attention and treatment. Should convulsions occur the physician should not jump at the conclusion that they are purely alcoholic in character and treat them as such, as they may be uremic and therefore of a much more serious nature. In all such cases morphine or other opiates should be used with great care if used at all. In the convalescent stage of delirium tremens most patients should have appropriate tonics, and these should be continued for some time.

VOMITING IN PREGNANCY.

GILLIATT and KENNAWAY, in the *Quarterly Journal of Medicine* for October, 1918, and January, 1919, state:

1. In some forms of pernicious vomiting a stage is reached when the ammonia index shows a rapid increase in the course of a few days to values between 30 and 50; at this time the acetone bodies are being produced in large amounts. The changes observed seem too great and sudden to be the result of starvation alone. When this condition appears, abortion seems to be the only treatment which is of any avail, and rapid improvement is to be expected from it in the great majority of cases.

2. Attention is drawn to the great scarcity in the literature of adequate analyses of the urine in this disease, especially in regard to the output of acetone bodies. Further differentiation of the various forms of pernicious vomiting is required, since in some recorded cases the ammonia index is even subnormal.

3. Such results as have so far been obtained as to the state of the alkali reserve of the blood in pernicious vomiting suggest that ammonia is very efficiently utilized in the preservation of this reserve.

SODIUM OXYMERCURY-ORTHONITRO-PHENOLATE (MERCUROPHEN).

SCHAMBERG, KOLMER, RAIZISS and TRIST, in the *Journal of Infectious Diseases* for June, 1919, state that sodium oxymercury-orthonitrate-phenolate, for convenience designated by them as mercurophen, possesses certain superior properties over other mercurial compounds, as follows:

In germicidal activity mercurophen is equal or superior to mercuric chloride and other mercurial compounds containing more mercury; inasmuch as the germicidal activity of this class of compounds bears a relation to their content in mercury and the electrolytic dissociation of the mercury compound in watery solution, mercurophen is of special interest from the chemotherapeutic standpoint.

Mercurophen is generally more rapid in its germicidal activity than other mercurial compounds.

Mercurophen appears to possess a special destructive affinity for cocci and spore-forming bacilli.

Mercurophen has proven superior to mercuric chloride in the disinfection of urine, feces, sputum, pus, catheters, instruments, rubber gloves, and the skin.

Mercurophen maintains a higher degree of germicidal activity in blood serum than mercurial chloride.

Mercurophen does not precipitate pro-

tein in as high concentration as 1:100; nor does it irritate the skin or tarnish surgical instruments.

Mercurophen is somewhat more trypanocidal than mercuric chloride and is capable of temporarily raising the bactericidal action of the blood after intravenous administration.

In terms of mercury, mercurophen is less toxic for animals than other soluble mercurial compounds, and this constitutes a fact of much importance in the chemotherapy of this class of compounds.

TREATMENT OF INFLUENZA AND POSTINFLUENZAL PNEUMONIAS.

GARDNER, in the *Journal-Lancet* for June, 1919, states that the partially autolyzed vaccine of Rosenow, and other antigens, especially those of pharmaceutical houses, have been used by a few physicians during influenza to prevent pneumonia. The body during an acute influenzal attack is doing its best to build up its immunity, and it seems from the theoretical standpoint an inopportune time to try active immunization. It simply adds fuel to the fire. Those who use it do so without thinking or with the idea that an active immunity may be produced before pneumonia has had a chance to develop. Vaccine or any other bacterial antigen during the pneumonia itself probably does no good; from clinical and laboratory evidence there are indications that harm may result.

Only one type of specific treatment employed to date has a sound theoretical basis: that is the use of serum, plasma, or whole blood from canvalescent pneumonia patients. Since the pneumococci found in these pneumonias have not fallen into the Type 1 and Type 2 classes, as described by Cole, but have been "atypical," horse serum has proved a failure. However, a patient who has recently recovered should have antibodies present against the organisms which caused the pneumonia. If another patient with a similar pneumonia were transfused, using the convalescent patient as a donor, the recipient should receive certain benefit, provided that the same strain of organisms were the cause of the disease in both cases. One objection to transfusion is the probable necessity of matching bloods. By allowing the blood to clot, and injecting only the serum intravenously, a smaller bulk is given; and the removal of the donor's corpuscles prevents, at least, some possible undesirable reactions.

The dose Gardner has employed has been 75 to 100 Cc., repeated every twenty-four hours until improvement. If the serum was potent, usually there was improvement in a few hours, as shown by a drop in temperature and a decrease of the toxemia. In some cases it was apparently so marked that the response was similar to the effect of antitoxin upon diphtheria. At first he was very hesitant to believe that the results were anything more than occasionally occurred in patients who had had no serum, but with more experience he was convinced of its value. The following points were brought out by his studies:

1. Sera of simple influenza patients had no effect upon pneumonia.

2. Sera of convalescent pneumonia patients varied as to potency—possibly the result of bacterial strains.

3. Pooled sera, or sera obtained from separate patients and injected on successive days, very often gave good results, while serum from a single donor was without effect.

4. Serum of convalescent patients lost potency after three to six weeks, the best probably being obtained from five to fourteen days after defervescence.

5. There was no immediate effect, as a rule, upon the lung findings, but simply a neutralization of toxemia.

6. Patients with high leucocytosis, thus indicating possible complications, did not respond as well as the pneumonias with low leucocyte count or leucopenia.

7. It is not necessary to match bloods. A Wassermann should be taken upon all donors and, if possible, a history and physical examination to rule out syphilis.

8. No reactions were noted except a slight chill and rise in temperature in one patient. McGuire and Redden report chills in the majority of cases, but they used doses much above 100 Cc.

9. The serum is most efficient in the early stages.

With 1600 cases of influenza up to April 1, 640 patients had pneumonia with definite signs of consolidation. No doubt many more had scattered lobules involved, as no radiographic examination was made, and the majority of notes were made by the internes, some of whom were senior students. The mortality was 44 per cent, the death-rate being approximately the same for all months. As stated before, the majority of the patients had pneumonia upon admission. Forty-two patients were given one or more intravenous injections of convalescent serum. Nearly all of these cases he thought were critical or moribund. The mortality rate was 33 per cent, therefore being much lower than untreated cases of similar severity.

In looking over the literature, Gardner has found reports of 297 cases treated by a part or the whole of convalescent blood. The average mortality rate was 21 per cent, against 45 per cent for controls.

CALCIUM IN EXCITED STATES.

In the *Journal of Mental Science* for April, 1919, GRAVES states that according to Prof. William Bayliss calcium is necessary for the normal effect of adrenalin on sympathetic nerve-endings. Acting on the assumption that in acute excited states there can be no lack of adrenalin in the body but an absence of its "fixation ion," Graves has exhibited calcium lactate in ten-grain doses to many cases of more or less acute excitement with satisfactory results. The cases include, of the manias: epileptic, simple, delirious, and recurrent; agitated melancholia and recent acute hallucinations. The effect of the drug is to calm the mental state and improve the physical condition. A rapid, weak pulse becomes slower and stronger, any diarrhea present ceases or is improved; a dry, harsh skin becomes moist and supple, and the appetite also is improved. The younger the case the better the result, similarly the more recent the case, especially if of influenzal origin. Some of the cases, however, have responded although over forty years of age, and several old-standing cases have shown a temporary improvement.

SPRING HAY-FEVER: ITS CAUSE, PREVENTION, AND TREATMENT.

SCHEPPEGRELL, in the *New York Medical Journal* of May 10, 1919, states that calcium chloride, or preferably the less irritating calcium lactate, is occasionally of benefit in hay-fever. It should be given in doses of fifteen grains, well diluted, after meals. In cases of hyperacidity, sodium bicarbonate in the effervescent form should be administered. The dose is fifteen grains three or four times daily. In one of our cases a seasonal cure resulted from the administration of ten grains of quinine three times daily. In other cases it was without benefit. This would indicate that, in this case, malaria was the predisposing cause, which was corrected by the quinine. In cases associated with asthma, sodium iodide may be administered, the dose being ten to twenty drops of a saturated solution three times daily and well diluted.

Local treatment consisting of menthol in the form of an oil spray is of benefit in some cases of hay-fever, but aggravates the attack in others. Two grains to the ounce of liquid petrolatum is the usual proportion. The following formula gives temporary relief, but tends to establish the cocaine habit:

> Adrenalin solution, 1/1000;
> Two-per-cent solution of cocaine,
> Normal saline solution, āā fl.3j.
>
> Sig.: Two drops into each nostril as directed.

Solutions of cocaine and of adrenalin tend to develop a turgescence of the nasal mucosa which aggravates the hay-fever. They should therefore be used only to give relief in severe paroxysms. The adrenalin and cocaine may also be used in the form

of an ointment, but should be prescribed with the same precautions as the solution. For the conjunctivitis that frequently accompanies hay-fever, five-per-cent argyrol may be used, or the following may be prescribed:

Sodii biborate,
Acidi borici, āā gr. xv;
Sodii chlor., gr. iij;
Aquæ dest., q. s. fl.℥j.

Sig.: For eyes as directed.

The first systematic effort to treat hay-fever by immunological methods was by Dunbar in 1903. He isolated a substance, which he believed to be a toxin, from the pollens and prepared an antitoxin, which he called pollantin, by the injection of horses and rabbits. He claimed that the blood serum of these animals, after a prolonged treatment, had the effect of neutralizing the effects of the pollen. The pollantin is applied to the nasal mucosa or conjunctiva of hay-fever subjects, preferably before the beginning of the attack. Although reports of the successful use of pollantin were published for some time after its introduction, many unfavorable reports have since been made. It is toxic to hay-fever subjects when injected hypodermically, and Weichardt has demonstrated that it possesses no more therapeutic effect than the serum from which it is prepared. It is no longer used to any extent.

In developing an active immunization against hay-fever, hypodermic injections are made of the extract of the pollen to which the patient is sensitive and to which he will be exposed. This is determined by injecting into (not under) the skin five units of pollen extract, the extent of the reaction indicating the degree of sensitization of the patient. As the grass pollens are the most common cause of spring hay-fever, this should first be injected. As a matter of routine, we also make the diagnostic test for the ragweed pollen, but the immunization for the fall hay-fever, for which this is responsible, need not commence until July 8. If the patient is found sensitive to the grass pollen, the prophylactic treatment should preferably be commenced six weeks before the opening of the spring fever season. The grass pollen extract for the prevention of hay-fever should be injected two or three times weekly, commencing with ten units and increasing gradually to 100 units. As soon as the spring hay-fever season is due the injections should be reduced to ten to twenty units, as the patient is now inhaling the atmospheric pollens.

Pollen and Vaccine Therapy.—Should a marked attack of hay-fever develop in the patient during the treatment, benefit will be obtained by the injection of a suitable vaccine. When practicable, this should be autogenous. When, however, this cannot be obtained, a mixed catarrhal vaccine may be injected. In his hay-fever clinic he uses a mixed vaccine prepared according to a special formula which has given satisfactory results. After the acute symptoms have subsided, the pollen extracts are again injected until the patient is relieved.

Results of Treatment.—From analysis of the results in 707 cases which included the spring, fall, and the combined forms of hay-fever, there were seasoned cures in forty-nine per cent of the cases, and marked improvement in forty per cent, or satisfactory results in eighty-seven per cent of the total number. In four per cent of the cases there was little or no perceptible improvement, and seven per cent of the patients discontinued treatment before the results could be noted. In no case was there any aggravation of the hay-fever symptoms from the treatment, or other ill effect.

SERUM IN LOBAR PNEUMONIA.

HART, in the *Medical Record* of May 31, 1919, gives a résumé of his article as follows:

1. A positive blood culture in lobar pneumonia is usually an indication that one may expect a severe course.

2. It is rare for a patient who has received serum to escape a subsequent "serum illness." This may be mild or severe, but

bears no relationship to the amount of serum given. Serum illness in these cases does not endanger life.

3. Antipneumococcus serum is a distinct aid to nature's effort to sterilize the blood stream.

4. When serum fails to sterilize the blood an acute pneumococcus endocarditis should be considered as a possible cause. This was present in three of his cases.

REACTION AFTER BRONCHOSCOPY.

CHEVALIER JACKSON (*Pennsylvania Medical Journal,* April, 1919) notes that the chief causes of reaction after bronchoscopy are: Rough, unskilled instrumentation; septic instruments; prolonged bronchoscopy, say over fifteen minutes in an infant under one year, thirty minutes in older children; anesthesia, which interferes with expulsion of infective agents; too short an interval after a previous bronchoscopy; abrasion or even roughening of the epithelium in the presence of an already established purulent process.

The causes of reaction are all avoidable except the last enumerated above, and even this is avoidable except in rare instances, if especial care be taken.

Therefore it can be stated that a carefully, properly and skilfully done bronchoscopy is associated with little or no reaction in recent cases of foreign body in the bronchi, if no previous bronchoscopy has been recently done. Anything similar to surgical shock is due to prolongation of the procedure or to faulty technique.

COTTON-PROCESS ETHER AND ETHER ANALGESIA.

COTTON (*American Journal of Surgery,* April, 1919), as the result of a careful study, found that the actual irritation value of any ether of standard aldehyde percentage to the mucous membrane varied inversely with the anesthetic power of the said ether, and directly with the immunity of the patient to ether anesthesia. This presupposed that (1) patients varied; as also do (2) the anesthetic powers of different cans of ether.

In proof of the first contention a large amount of ether was mixed and administered to different groups of patients. Five cases of a known alcoholic type were compared with five cases of a similar weight, but of a type which had not indulged. These patients were from thirty to thirty-five years of age. The alcoholics required from 25 to 75 per cent more ether than did the non-alcoholics.

In discussing the variation in anesthetic potency of different cans of ether an unlimited field of research is entered, that leads back to the startling suggestion of a year ago that "absolute ether is not an anesthetic at all."

Before proceeding further it is necessary to come to an agreement concerning the state commonly considered as anesthesia. Personally, we consider anesthesia as analgesia—blocking of sensory impulses from the periphery, plus narcosis—or sleep.

When a patient shows a type of breathing, a certain amount of muscular relaxation and contracted central pupil, is he actually surgically anesthetized? For years anesthetists and surgeons have recognized ether anesthesia by a series of such symptoms, and have neglected the fact that patients carried to this stage may still suffer from severe shock, and instead of being anesthetized are in reality only narcotized.

Three years ago statistics affecting 150 abdominal cases operated under anesthesia by a certain brand of ether were compared with the results in another 150 similar cases anesthetized with another make of ether. With one ether, after induction, from 4 to 8 ounces were required per hour of maintenance; with the other ether from 6 to 12 ounces. From the aldehyde research it had appeared likely, but this was the first actual record that anesthetic ethers could vary in potency. It was found that the more potent ether contained traces of gases as well as more alcohol. Clinical trial of the weaker ether, in some ten cases, by increas-

ing the alcoholic content, while it lowered the freezing point of exhaled moisture, preventing mask frosting and retaining ether and ether products on the mask longer, did not vary its anesthetic potency. It was, therefore, reasonable to suppose that some factor, other than alcohol, varied the anesthetic potency of an ether.

Research was then undertaken to obtain absolute ether from the commercial ethers already on the market. At that time these ethers were in a far more impure state than they are now, as the fusel oil groups were always detectable. After one and one-half years of hard study and work, a sufficiently chemically pure ether was obtained to warrant its clinical trial on patients.

This ether was so mild in odor that it could have formed the basis for any perfume. To the surprise and chagrin of all concerned, on administration it was found not to be a good anesthetic. Dr. Samuel Johnston, a noted Toronto anesthetist, used 15 ounces on a middle-aged patient, who was congested to blueness without mucous secretion and without the production of proper anesthesia. There was a severe struggling stage; while muscular rigidity and sensory reflexes persisted and could not be suppressed. A few drops of Squibb's ether were then administered and the patient sank into a quiet anesthesia without sensory reflex. Very little more Squibb's ether was required during the whole of that operation.

The first coöperative thought of was carbon dioxide. It was found that the peripheral spasm and muscular tremor following the administration of from 6 to 8 ounces of absolute ether could be completely relieved by a small amount of carbon dioxide. Carbon - dioxide - absolute - ether anesthesia is a type of its own.

The anesthesia produced by this carbon-dioxide-ether method is very similar to that obtained from nitrous oxide, and the recovery is almost as rapid. In practice it was found convenient to administer the carbon dioxide in a solution with ether in a metal siphon-soda arrangement with a controller similar to that used on the glass ethyl chloride tubes.

Over 20 operations of a major as well as many cases of a minor type were performed under carbon-dioxide-ether anesthesia with excellent results. There was no real after-nausea in any one case. The amount of ether averaged about 5 ounces an hour. The only objection to the anesthesia was the excessive stimulation of respiratory effort. The color and pulse were good and no case showed mucus.

While clinical experiments continued in the operating-room, ether research progressed in the laboratories, as there was not considered to be enough carbon dioxide in most commercial ethers to act as the potential factor in anesthesia. It was then discovered that this absolute ether on being passed through a certain process developed wonderful anesthetic powers. Its analgesic properties were such that almost major operations could be performed with the patient still able to articulate clearly, without pain and not at all sleepy. More concentrated administration produced beautiful, quiet, sleep anesthesia, without shock. After a certain length of time, however, this product would deteriorate to an unusable degree, although the analgesic power increased in more than equal proportions. A few breaths, although fairly irritating, would produce almost completely obtunded sensation for some hours.

Careful concentration and extraction of gases from this product demonstrated the presence of certain ethylenes and their by-products. As these were not present in the absolute ether base, they must have developed in the process.

Ethylene gas was then made by text-book methods and added to absolute ether. It transformed absolute ether into a moderately good anesthetic, but the results were not comparable with those previously obtained; in fact such ether was by no means as good as Squibb's. However, with careful synthesizing and research, anesthetic synergists of exceedingly high value and potency were finally obtained.

The product, now recognized by the medical profession as cotton-process ether, is simply ether, purified to an almost absolute stage, plus certain synergists. As these synergists were for the most part of a gaseous nature it was considered desirable to retain them in the ether in greater quantities than would remain at ordinary atmospheric pressure. With this end in view the ether has been kept in sealed glass ampoules of about one-ounce capacity, the idea being to administer it direct from such containers.

Although this ether was primarily developed for analgesia only, a number of anesthetists and surgeons have used it and have reported it satisfactory for anesthesia.

Administration from drop bottle on open mask, though apparently successful, should never be used, as ether gases of great anesthetic value are allowed to escape. By this method the anesthetic power is about that customarily obtained from any good commercial ether, the after-effects being possibly less.

In administration direct from ampoule on open mask the glass tip of the ampoule is broken off and the end of the ampoule is inserted into the rubber socket of a device similar to the automatic cut-offs of ethyl chloride tubes. The gas pressure in the ampoule is sufficient to expel the ether when the cut-off is opened and the ether is dropped or sprayed on the mask as with ethyl chloride.

The value of this method was first drawn to the author's attention by Dr. J. F. Baldwin of Grant Hospital, Columbus, O., who was the first surgeon to use highly charged ether in any moderate series of major cases. The technique is one of Dr. R. A. Rice's "Perfected Methods of Anesthesia" (described in the American Year-Book of Anesthesia and Analgesia, 1915-1916), in which oxygen, from a low-pressure tank, is led through the Gwathmey three-bottle, dosimetric vapor apparatus, with its ascending and descending percentage control, and the saturated oxygen-ether vapor, washed and moistened in the warm-water bottle, is conducted by means of a rubber tube to a closely fitting face mask, or oral airway, to which is attached a rebreathing bag.

Baldwin reported 20 abdominal operations carried out, from start to finish, with this apparatus and method of anesthesia. The amount of ether used averaged from 1 to 3 ounces. The recovery was more rapid and the after-effects less than those occurring with ordinary ether. With this ether and method it was possible to induce anesthesia by the vapor method, whereas previously, with other tinned ether, ethyl chloride was always used for induction and almost double the amount of ether was found necessary for maintenance.

This apparatus was designed to provide a vapor device with a large ether container, providing area sufficient for surface evaporation, thus obviating the undesirable feature of carrying ether particles, as they are bound to be when the oxygen is passed through the ether. The ether is placed in the container through a tap in the top of the container, all ether gases being thereby retained. Oxygen is admitted from a low-pressure tank into a soft-rubber bag at the rate of about 10 liters an hour. With the mask fitted tightly over the patient's face, tap is opened permitting the breathing of oxygen, then tap is slowly opened allowing part of the oxygen to carry over the ether vapor. As more ether is required tap is closed down. Excess rebreathing, causing dysphonia, may be rectified by emptying bag. The whole apparatus is hung on the oxygen tank.

The method is positively fool-proof and will maintain the patients uniformly at any required depth of anesthesia. With it the new ether shows over double the anesthetic potency of tinned ether, and recovery is almost instantaneous.

By open methods, although the amount of ether required is not large, patients recover so rapidly from deep stages of anesthesia that a careful and even drop-rate administration is required. By the oxygen semiclosed vapor apparatus the mainte-

nance of anesthesia is much more regular. If anesthesia is badly administered, however, a certain amount of salivation may result.

In selecting patients for this anesthetic, attention should always be paid to the urinary analysis in order to detect the presence of any degree of acidosis. In judging the sickening effects of any anesthetic it is well to bear in mind the following two facts: Postoperative nausea rarely occurs in elderly people, especially when they are suffering from any degree of heightened blood-pressure; and a certain class of operations having to do with the intestines, and especially the gall-bladder, will of themselves give rise to nausea and vomiting.

One very important point with regard to war surgery is that of cigarette inhalation immediately previous to anesthesia by any ether. If the soldier patient has inhaled cigarette smoke within ten minutes of his induction, the systolic blood-pressure will rise from 30 to 100 mm. beyond that rise which would normally take place, and even dilatation of the heart may result. He will also invariably suffer from a headache afterwards. Cigarette inhalation following an anesthetic always aids the recovery of patients from the effects of the ether.

THE EARLY PATHOGENIC DIAGNOSIS OF GASEOUS GANGRENE.

Sacquepee and Vergne (*La Presse Médicale,* No. 23, April 24, 1919) call attention to the fact that the early diagnosis of the specific bacterial form of infection which produces gaseous gangrene is a matter of both importance and some difficulty. Those cases characterized by pronounced edema and marked toxicity are in 15 per cent due to the Bacillus Bellonensis. When by culture media they are unable to make a specific diagnosis they employ guinea-pigs. The animals are inoculated respectively with the anti-Bellonensis serum, the anti-perfringens serum and the anti-vibrion septic serum. Whereupon each is inoculated with macerated gangrenous tissue taken from the invalid.

Two animals died; one remains immune because it has received the serum which immunizes it to that particular form of infection, whereby the form of serum to be administered to the patient is promptly determined.

THE EFFECT OF DIET ON THE HEALING OF WOUNDS.

Clark (*Bulletin of the Johns Hopkins Hospital,* May, 1919) experimented with twelve dogs as nearly the same age, size, and general condition as possible. Three were put on a mixed diet containing 41 grammes of fat, 107 grammes of lean meat, and 351 grammes of bread; three on a carbohydrate diet made up of 500 grammes of bread; three on a protein diet made up of 500 grammes of lean meat; and three on a fat diet made up of 300 grammes of fat and 100 grammes of bread. The quantities named were for each set of three dogs. They were fed on these diets for three days before the wounds were made. Observations showed in all cases a constant weight.

Preliminary experiments with various types of dressings showed that the wounds healed better and showed less tendency to infection when left entirely open with no dressing of any kind. The dogs were given ether anesthesia, the backs were shaved, and two circular skin flaps (one large and one small) were removed from each side of the back. The wounds were placed where the dog could not lick them and were left open. As soon as they were made, the size of the wounds was traced on a piece of transparent celluloid with a wax pencil, and similar tracings were made at intervals of three or four days throughout the experiment. These areas were copied on heavy tracing paper and measured in square centimeters by means of an Amsler polar planimeter. If a wound showed marked infection the results were discarded.

A second set of wounds was made after the first had healed, and finally a third set, in which the dogs were interchanged in diets.

The authors conclude that in connection

with these results it is interesting to consider the well-known fact that the ingestion of proteins produces a much greater increase in body metabolism than that of any other foodstuffs. In a recent monograph on the subject of the stimulating effects of nutrients, Benedict and Carpenter have given a very complete report of this question. They find that while carbohydrates give a maximum increment to the metabolism of 25 per cent and fats 12 per cent, this increment occurs within two hours and the metabolism then returns rapidly to the base line. With proteins the increment reached a maximum of 25 per cent to 45 per cent and persisted for as long as eight to twelve hours. This increase in metabolism, or excess energy given off by the body as a result of the ingestion of food, may be regarded as waste energy, but Benedict suggests that we may consider the extra heat developed under these conditions as a normal physiological stimulus to cellular activity. Practical experience with heavy muscular work on protein and carbohydrate diets points to this conclusion, and the results reported here would certainly support the idea that proteins have a specific influence in stimulating the whole cellular system to greater activity.

The length of the quiescent period of wound healing is affected by the diet. It varies from zero in protein-fed dogs to six days in the fat-fed animals. This variation in the quiescent period is more marked in smaller wounds. As a consequence, the date of final healing differs by about five days for the protein- and fat-fed dogs.

When the second period, or period of contraction, has set in the rate of contraction is not affected by the diet. It is governed by a variable factor depending on the age of the wound and by a constant factor proportional to the original size.

The beginning of Period III, the period of epidermization, is independent of the size of the wound and the diet. It is determined by the age of the wound. Contraction and epidermization continue together until the wound is entirely healed.

After the wound is healed the scar continues to contract until pigmentation sets in. During this latter process it enlarges and reaches a stationary state after pigmentation is complete.

AN EXPERIMENTAL STUDY OF HEMORRHAGE.

BINET (*La Presse Médicale*, April 24, 1919) notes that blood undergoes important modifications both in regard to its histological constitution and its biologic properties. Reds are lessened in proportion to the quantity of blood lost. Brodin and Richet have shown experimentally that a loss of 75 per cent results in prompt death. When 70 per cent are lost the death is somewhat delayed. A loss of less than 70 per cent permits of recovery under appropriate treatment. The whites are not lost at the same rate, probably due to the fact that incident to hypotension they adhere to the vascular walls, to return to the circulation later, thus accounting for the rapid post-hemorrhagic leucocytosis.

Achard has shown that in the course of a copious bleeding there is more globulin in relation to the reds at the end of the process than at the beginning. Charles Richet has shown that the lessened density of the blood is proportioned to the amount lost. The 1.056 of normal drops in an almost mathematical ratio, so that an estimation of specific gravity enables one to determine the quantity lost. When the specific gravity falls to 1.048 the prognosis is gloomy, though not absolutely bad. Blood sugar is increased by bleeding, as is also cholesterin. Immediately after hemorrhage there is a hypercoagulability, which disappears in twenty-four hours as a rule, or may be prolonged and may continue even for a week if the hemorrhage is repeated.

Moreover after the hemorrhage a stimulating substance is formed, by virtue of which a rapid production of reds is excited. Some interesting experiments are cited to show that the normal shivering reaction against chilling is inhibited by bleeding.

FULMINATING SYPHILIDE.

GOOKEN (*American Journal of Syphilis*, quoted in the *Urologic and Cutaneous Review* for May, 1919) narrates a case of syphilis which is of interest because of the short interval between the appearance of the initial lesion and the succeeding symptoms. The patient, twenty-four years old, was admitted to the hospital January 21, 1918, and bore the appearance of one profoundly ill. Two days previously he had been able to work, but the following day he was too ill to leave his bed. He complained of no acute pain.

The following history was elicited: Three weeks after his marriage a lesion appeared on the penis which was diagnosed as a hard chancre and treatment instituted. This was nine weeks before his admission to the hospital. To the best of his knowledge his wife is and always was in good health. On examination of the patient a small indurated papule was still present on the corona. The skin over the entire body, more pronounced over the back and chest, was covered with reddish-brown lesions of the macular type. At the lower third of both tibiæ were well-advanced gummatous lesions about four inches long and one and one-half inches wide, involving the bone. The chest examination showed an area of dulness about three inches in diameter just above the right nipple. There was marked liver enlargement, the lower border extending three fingerbreadths below the costal margin. The clinical picture of the disease was characterized by persistent cough with expectoration of copious yellowish, mucopurulent sputum. No tubercle bacilli were present in the sputum. Repeated Widal tests and examination for malaria negative. Blood Wassermann, four plus. Spinal fluid, cells 5, globulin, albumin and Fehling's reduction normal. Gold curve, 00010000000/ Wassermann negative to 2 Cc.

Antiluetic treatment was begun on the third day after admission, consisting of intramuscular injections of mercury benzoate, 1½ grains every second day. This was followed by arsphenamine, 0.6 gm. every fourth day for four doses. This was again followed by mercury benzoate. All evidences of syphilis disappeared, the Wassermann test became negative, and patient was dismissed on March 5.

Here undoubtedly is a case presenting secondary skin lesions, gumma of bone, gumma of lung, and hepatic-visceral involvement simultaneously and within nine weeks of the appearance of the initial lesion and with the chancre still present. Unquestionably the infection which so vigorously attacked its new host was acquired from his wife, who herself manifested no visible signs of the disease.

CERVICAL SYMPATHECTOMY AS A MEANS OF PERMANENT CURE OF FACIAL (TRIGEMINAL) NEURALGIA.

PLETH (*American Journal of Surgery*, May, 1919) observes that cervical sympathectomy is a promising means of curing this painful condition. He observes that it takes usually weeks or even months before a definite relief is noticeable from simply removing the cervical ganglion and branches given from it. Thus in the case of a Mexican peon who suffered from tic douloureux of the left hand, following a crushing injury, attempts to relieve pain by plunging the hand into boiling hot oil promptly produced a claw-hand, but did not relieve the pain. Later on he went to Mexico City and was operated on, linear scars demonstrating that operations had been performed on the median and ulnar nerves. This did not relieve the pain either. Later, an operation was performed by a Mexican surgeon, which consisted of the exposure and injection with osmic acid of the individual branches of the axillary plexus. This also produced no relief. At this time he began to suffer from trifacial neuralgia.

A cervical sympathectomy was now performed with the view of relieving the facial neuralgia, in which the author succeeded in the space of between two and three months. In this case, superficial and deep injections of alcohol were made at the various tri-

geminal foramina. Jointly with the facial neuralgia, the pain in the hand disappeared.

Leriche is quoted to the effect that by peripheral and periarterial sympathectomy certain neuralgias of the viscera were cured; and that a causalgia of the median nerve was cured by resecting a portion of the sheath of the brachial artery.

Jacobsen is quoted too as having permanently cured sciatica by resection of a portion of the femoral artery, while Veyrassat claims to have cured a case of malperforans by a similar operation, which he calls periarterial sympathectomy.

BISMUTH PASTE IN WAR SURGERY.

BECK (*Minnesota Medicine,* May, 1919) presents a résumé of his work on bismuth paste treatment in chronic suppurations due to disease and also crushing wounds, illustrating the technique by means of moving films. The results obtained eliminate at least sixty-five per cent of all chronic suppurations, after they have gone through the usual procedure of surgical treatment. The balance of thirty-five per cent he treats by the skin-sliding operations, without any suture of the skin flap. The results were most satisfactory, since he thus eliminated nearly all the cases which had resisted previous surgical as well as paste treatment.

The principal points brought out were:

The method is often applied indiscriminately, without control by radiograms.

The mixture, when injected, is not sufficiently liquefied to fill all the sinuses and suppurating cavities.

The bismuth is applied in cases in which either a sequestrum or infected foreign body is at the bottom of the trouble.

The injections are often kept up after the wound is sterilized and thus no chance is given for healing.

The instruments used are often improvised and unsuitable.

The bismuth mixture is very often spoiled by the accidental mixture of a few drops of water. (Syringes should be perfectly dry when used.)

The sinus or fistula is nothing more than a shriveled abscess or abscesses. It leads from its opening on the skin or into the bowel to the place where the disease originated, and this focus of disease is often at a considerable distance from the opening or openings of the sinus. It is therefore inconsistent to try to eradicate the suppuration by only dissecting the sinus tracts. Even with the radiographic reproductions of the labyrinths or sinuses before us, an attempt to dissect the same often would be absolutely hopeless.

If the focus from which the sinus originated is reached and disinfected, in practically all instances the sinuses will close up. It is therefore essential that when a fistula or sinus is injected with bismuth paste, it must reach the focus of the disease. If through faulty technique this is not accomplished, good results cannot be expected. The indications are:

All sinuses resulting from chronic suppurative joint affections, tuberculous as well as non-tuberculous. This especially includes the sinuses after spondylitis and hip-joint diseases.

Sinuses after osteomyelitis of long bones and flat bones, including ribs.

Sinuses resulting from suppurative diseases of parenchymatous organs, such as the kidney and other glandular structures in the body, including suppurative tuberculous glands.

Postoperative sinuses which sometimes remain after draining infected wounds.

Sinuses after empyema of the pleura or from lung abscess.

In cases of abscess and suppuration of the mammary glands.

In all infected wounds due to crushing injuries.

In infected and long suppurating war wounds due to shrapnel or bayonet injury.

It has already been tested in these and found most effective. The rapid accumulation of this class of cases due to the war in Europe will furnish a tremendous amount of material for treatment.

In rectal fistula or pararectal abscesses.

By otolaryngologists in the treatment of suppurative antrum disease and accessory sinuses, as well as in the after-treatment of mastoid operations.

By dentists in suppurative sinuses about the teeth and jaws and in pyorrhea alveolaris.

It has also been used by the writer in chronic endometritis.

In the prevention of sinuses by incising the cold abscess and injecting it with a five-per-cent bismuth paste.

To insure success in employing bismuth paste the essential points are summarized as follows:

One should make a correct diagnosis by all the methods at his disposal and corroborate the same with stereoscopic radiograms, before an injection is made.

Before attempting to employ this method one should acquaint himself thoroughly with the technique.

The proper instruments should be employed in order to carry out the technique correctly.

The patient should be kept under constant observation to prevent bismuth intoxication.

Examine the secretions from the sinus before the first injection, by slide and culture, and often by the inoculation of guinea-pigs; then three days later test the sterilizing effect of the injection.

As long as the sinus contains microorganisms it should be reinjected, but if it is found sterile, it should not be reinjected.

It is a good practice to wait at least one week after the first injection before repeating it.

A stereoscopic radiogram of the parts affected should always precede the first injection, in order to detect the presence of foreign bodies. The shadow of the paste might make their presence obscure.

Following the injection a second set of stereoscopic radiograms should be taken in order to make a correct anatomical diagnosis.

In case a foreign body or sequestrum is present the injection is useless; operation the only means.

Acute suppurative processes should not be treated with bismuth paste; only chronic suppurations, both tubercular and nontubercular.

Bismuth poisoning may be easily prevented by using only small quantities, or when large quantities are required they should not be retained longer than ten days and the patient should be carefully watched.

Fecal fistula and other postoperative sinuses are very favorably affected by bismuth paste treatment.

A ten-per-cent bismuth vaselin may be used in cold abscesses. In practically all instances the secondary infection can be prevented, providing the technique is carefully observed.

If after all these rules of the bismuth treatment have been observed and the cases treated for a sufficiently long period they persist in discharging, they should not be given up as entirely hopeless, because in the writer's experience he has found that by a surgical measure, based on certain surgical principles, he has been able to close up the majority of these apparently hopeless cases.

The procedure is as follows:

After the diseased area is located by means of roentgenograms, it is freely exposed by cutting away all the unhealthy skin and scar tissue. The diseased bone is then thoroughly curetted or chiseled away until one is certain that there is not a vestige left. Should this produce a deep groove, it must be converted into a very shallow one or even into a flat surface, by cutting away a sufficient quantity of healthy bone on either side.

After this is done, a skin flap is cut from one or each side, sufficiently large to cover almost the entire denuded bone surface, care being taken, however, that no subcutaneous fat is carried with it. The flaps are then shifted into the depth of the cavity and retained there by packing gauze against them. It is not absolutely necessary that every part of the bone cavity should be cov-

ered. The skin will grow from the edges of the flaps until every portion of the raw bone surface is covered with true skin. To prevent retraction or slipping of the skin flaps, the author has frequently used a carpet tack to fasten temporarily the tip of the skin flap to the bone until adhesion has taken place. The areas of muscle and subcutaneous tissue which have been exposed by sliding the skin are left denuded. No attempt should be made to bring their edges together by suture or otherwise. In only very rare instances has it been necessary to use any suture material whatever, except, of course, in the ligation of bleeders.

Forty-eight hours later the gauze pack which has kept these flaps in apposition to the denuded bone surfaces is removed, and it will be found that firm adhesion has already taken place. In one case, in which an assistant displaced one of the flaps during the application of the dressing immediately after the operation, the writer was unable, twenty-fours later, to replace the skin flap in its proper place, until he had loosened it with a raspatory. The rapidity with which adhesion of the skin to the bone takes place is remarkable.

The after-treatment is most interesting. As soon as granulations on the denuded surfaces from which the skin has been removed begin to form, strips of adhesive plaster are applied, covering the margins of the skin border and the granulating surface all around the wound. This procedure will produce rapid epidermization of the denuded surface. The adhesive is changed daily. Within two or three weeks large areas will be covered by healthy skin, and in practically every instance the suppuration will stop after the denuded area has been epidermized. Small scars, of course, remain but will gradually shrink, so that a denuded surface the breadth of three fingers will have a scar no wider than one-half centimeter.

When the wound is not too deep, the skin flap may be omitted. It is simply left widely gaping and packed with gauze and allowed to granulate from the bottom. Later on adhesive plaster is put on the edges of the wound.

The writer has employed this method of skin sliding in a variety of cases: osteomyelitis of the femur, tibia, in hip-joint disease, in knee-joint disease, in the removal of the os calcis and of the metacarpal bones, in osteomyelitis of the ribs and of the sternum, and in other cases, including infected fractures and other injuries.

The same principle may be employed in cases of empyema and lung abscess.

THE OPERATIVE TECHNIQUE OF THERAPEUTIC ABORTION.

PARKE (*New York Medical Journal*, April 19, 1919) after rejecting drugs as useless believes the procedure of dilatation and curettement is applicable to pregnancies of four months and less. Beyond this period, owing to the great liability of hemorrhage, the processes of inducing labor should generally be resorted to. The pregnant uterus is both thin-walled and soft and should be treated with great gentleness. The cervix is dilated beyond the internal os until large enough to admit a large-sized curette and a curette forceps. With the latter the broken fragments of the product of conception are seized and abstracted. If the pregnancy has advanced beyond the fourth month the cervix can be readily dilated to admit the index-finger, which is the most intelligent curette of all. When the cavity is fairly clean the organ contracts and reduces the bleeding. The operation may be completed by washing out through a two-way catheter, with hot sterile water or various solutions, or the cavity may be swabbed out with a bit of gauze saturated with iodine. Rarely need any gauze be left in. If the organ does not contract and bleeding is too free it may mean that considerable placenta remains attached, and if circumstances admit further efforts for its removal should be made. If while bleeding is too free it is thought best to terminate the procedure, then the cavity should be packed with iodoform gauze and ergot given.

After the fourth month of pregnancy the above detailed method becomes less applicable, on account of the free bleeding which attends the procedure, and some method of starting labor pains is preferred. Such method will be the introduction of some foreign body into the lower uterine segment. If the cervix is long and uneffaced metallic dilators may be gently used to prepare the way for the introduction of a rubber bougie or catheter and for the packing of the canal with gauze. Parke likes to put the patient in the knee-chest posture (the Sims posture does very well), and expose the cervix and vault of the vagina by the use of a Sims speculum to draw the perineum well back. He then seizes the anterior and posterior lips of the cervix with a sponge or ring forceps. This gives an excellent view and control of the parts with which we have to deal. Iodine on a swab is applied to the cervix and canal and the adjacent parts protected by sterile or wet bichloride gauze. Now it is generally an easy matter to introduce a catheter or bougie, freely anointed with sterile glycerin, into the cervical canal by using forceps, without ever touching any other part of the operation or patient.

Having introduced one or two bougies their full length, barring an inch or two, a strip of gauze may be pressed alongside of them into the cervix, and more loosely packed into the vagina to prevent the instruments from being forced out too soon. Following this the patient usually remains in bed, but there is no reason why she may not sit up if she can do so without discomfort. Labor pains sometimes set in promptly and may be promoted by the hypodermic use of pituitrin, which, however, will not start them. Generally the pains begin within twenty-four hours and continue in a natural way until delivery is accomplished. Rarely this procedure fails to start a pain. Then further efforts must be made to bring about a delivery, for having put one's hand to the plough one cannot turn back. The next step is the introduction of a dilating bag of the pear-shaped type and appropriate size, to which a weight is attached. When this is expelled, if labor is not actively proceeding, some artificial method of delivery is in order, either the application of instruments or version and extraction. If the child is viable and not too near term, that is during the seventh and eighth months, vaginal Cæsarian section affords a quick if not easy way of accomplishing delivery.

The greatest risk in all these procedures is that of infection; and in a general way it may be stated that the longer drawn out the undertaking, the greater the risk; or, to speak more concretely, a prolonged tubing or bagging case is more apt to be followed by fever than is the more speedy curettement case. The latter Parke undertakes without much concern, but the former he approaches with profound respect.

UNDESCENDED AND MALDESCENDED TESTIS.

COLEY (*Surgery, Gynecology and Obstetrics,* May, 1919) notes that of 1040 cases of hernia in adults operated on by Dr. William A. Downes and himself, 49 or 4.71 per cent were associated with undescended testis. He concludes as follows:

In most cases of undescended or maldescended testis, the etiology points to a congenital origin, often influenced by the element of heredity and frequently associated—particularly in the double variety—with other development defects.

The atrophy usually found in the undescended or maldescended testis is not the result of the malposition. The change in structure and the atrophy are merely coincident, being due to congenital causes.

The question of the functional value of the undescended testis cannot be definitely answered in an individual case. It may be stated, however, as a general rule that an undescended or maldescended testis, with which there is associated a marked atrophy, has little or no functional value. However, the author believes with Uffreduzzi that in a considerable number of cases of undescended testis spermatogenesis is retained.

The ectopic testicle is practically always associated with an open vaginal process of peritoneum—*i.e.*, there is usually present a potential hernia. This vaginal process is almost invariably a congenital affair, for the reason that its position is entirely independent of the location of the testis.

Torsion of the cord is more frequently observed in the undescended testis than in the normal testis.

The undescended testis shows a greater tendency than the normal testis to malignant degeneration.

Operation should be advocated in children who have reached the age of eight or ten years, for the following reasons: (*a*) Operation permits the radical cure of the hernia with which the undescended testis is practically always associated, and which often cannot be controlled with a truss without causing pain and irritation to the testis. (*b*) By bringing the testis down into the scrotum before the age of puberty there is a possibility of causing further and more normal development of the testis.

Operation in adults or children over the age of 14 should be even more strongly urged, for the following reasons: (*a*) In order to cure the accompanying hernia, as has already been stated; (*b*) in order to place the testis in a position in which it is much less subject to trauma; (*c*) in order to lessen the chances of malignant degeneration.

The end-results in the author's series show that it is possible to cure the hernia in practically all cases. Unfortunately, in only a comparatively small number of cases did he find the testis occupying the bottom of the scrotum in the cases observed, several years after operation. The atrophied testicle is generally found to have retracted to mid-scrotum or in the region of the external ring, and in a position somewhat less liable to trauma than before operation. The result accomplished by the operation, the cure of the accompanying hernia, would seem to justify advocating operation for the undescended testis in adults.

The question of whether the traumatism incident to the operation on the undescended testis might not favor the development of malignant disease is one that should be considered; however at present it cannot be answered definitely. It should be noted that in none of the series of cases operated upon at the Hospital for Ruptured and Crippled during the past twenty-nine years has malignant disease been known to develop, although the author has personally observed one case of sarcoma of the testis in which the disease was either present at the time or developed shortly after the operation for undescended testis; possibly it had already started at the time the operation was performed. (The operation was performed by another surgeon.)

These conclusions differ slightly from the conclusions of his earlier paper. In that paper he stated that the undescended testis is almost invariably of little or no functional value. The author believes this statement is somewhat too strong and should be modified to the extent that the undescended testis is probably of functional value in not more than 10 per cent of the cases.

He still believes that the undescended testis should never be sacrificed in children, and that the practice which obtains in some of our hospitals, of removing the undescended testis in a large number or even in the majority of cases, is greatly to be deprecated. Even if the testis be of little functional value, it nevertheless is of great value in developing the male characteristics in the child and promoting general health. In the adult it should likewise be retained for its influence upon the mentality and for the moral effect if for no other reason.

As regards the age for operation, the writer still believes that operation is seldom indicated under the age of eight years. If the hernia is so slight as to be of little or no importance, it is better to wait until the child is ten to twelve years old before operating.

The author believes that abdominal ectopia, unless double, had best be left un-

treated, inasmuch as the operation is a difficult one and by no means altogether free from risk.

In children, however, he would never allow a case of double undescended testes to reach the age of puberty. In these cases it is safer to do the operation in two stages, operating on one side at a time.

It is interesting to note that there has been no death in this entire series of 415 operations.

COLORATION IN THE DIAGNOSIS OF SKIN DISEASES.

In numerous publications and pamphlets dealing with the many forms of animal and vegetable life, color is often used as the basis of rapid classification and identification.

BREMNER (*Dominion Medical Monthly,* quoted in the *Urologic and Cutaneous Review,* May, 1919), doubtless stimulated by the success of such methods of teaching, considers in detail the various colors under which a number of skin diseases may be classed.

The color in the skin partly depends upon the amount of pigment in the cells of the Malpighian layer, on the vascularity of the skin, with its wonderful arrangement of vessels, and on the thickness and tint of the corneous layer, the cuticle forming a screen of lesser or greater density to the vascular structure lying below. Speaking broadly the stratum corneum may be said to have a grayish tint and the Malpighian layer a yellowish.

Pigment is increased by exposure to light and heat, the actinic rays being chiefly responsible. That it can be increased by heat is proved by the occurrence of erythema ab igne, with its reticular mottling on parts of the body protected from light.

Pigmentation is nature's defense against the irritant effect of light.

Black as an occasional or constant tint is best represented in some of the congenital affections of which the pigmented mole is an example. It is often brown, but it is sometimes black. Ichthyosis can fairly be described as of a dirty appearance, the scales varying from brown to black. In the erythrodermic xeroderma the dry skin is red. Another example of this kind is nevus unius lateris, in which the scales covering the warty elevations may be of normal tint, or brown or black.

In keratodermia plantaris et palmaris the color is of yellowish appearance, but as the years go on it may turn to brown or black.

The pigmented warts or xerodermia pigmentosa afford another instance of congenital hyperpigmentation. Acanthosis nigricans, with its grayish-brown to black skin, may also be mentioned.

The dark-blue spots, the maculæ cæruleæ, which are an occasional sequence of pediculosis, are often interesting. A more frequent happening occurs in those cases of hyperpigmentation, together with scratch marks in pediculosis corporis, due to dirt, vermin, and scratching; hence the name "vagabond's disease."

It may be pointed out that the pediculus corporis in white races is grayish or white; in black races is black; in Eastern races is yellow—a good example of protective coloration and adaptation to the favored host.

Affections in which white is the predominant tint: Milium, with its gray-white glistening tumors; the white anemic center of the urticarial wheal; the white or silvery scale of psoriasis, sometimes gray to grayish-yellow; the milky white or pink tumors of molluscum contagiosum; scar tissue, with the reservation that all scars are not white; macular leprosy in its later stages; atrophic macules and striæ; sclerodermia, in early stage red, yellowish-brown with gray or pink spots, then white; chameleon-like changes of color can often be seen if the case is looked at from various angles.

Affections in which red or pink predominates: Marginal border of an urticarial wheal; pityriasis rosea, with its oval rose-colored spots; syphilitic roseola in which the color is dull pink; the pink variety of adenoma sebaceum; the periphery of tinea circinata.

Fawn or café au lait lesions: Tinea versicolor affords the best example of this tint. It may be mistaken for arsenical pigmentation, but in the latter the discoloration is "dappled" and there are no scales. In tinea versicolor a little friction easily removes the scales, and the microscope does the rest.

Light brown or buff tints: This color is well demonstrated in urticaria pigmentosa.

Yellow tint: Xanthelasma palpebrarum.

Orange-peel yellow: Xanthoma tuberosum multiplex. In xanthoma diabeticorum the color is orange-red to pink. Seborrhea corporis shows a pale, dull-yellow lesion.

Lemon: Pernicious anemia.

Green: As a distinct color it rarely occurs, the explanation being that red together with green produces yellow.

Brown: As a predominant color it appears in chloasma, the marginal patches of erythrasma, and in freckle.

Blue: Petechiæ, ecchymoses, purpura, certain trade stains, argyria (slate blue), some nevi, the results of cocaine injections, maculæ cæruleæ.

Purple: Erythema multiforme and the surrounding parts of a healed varicose ulcer.

Violet and lilac: Lichen planus is a typical example.

Mauve: The placques or bands of morphea may be described as mauve-colored to pink, the center later becoming pale (descriptive term "like old ivory").

Bronze: Addison's disease, diabetes, mycosis fungoides (not constant).

DIAGNOSIS OF GASTRODUODENAL ULCER.

BASSLER (*New York Medical Journal*, May 3, 1919) states that the diagnosis of ulcer of the stomach is made too often and not made often enough. If one were to take four groups of men, gastroenterologists, surgeons, general practitioners, and laymen, and subject to each ten cases of suspected ulcer, there would be a large per cent of error made by each group.

The classical syndrome of duodenal ulcer, as expressed by Moynihan, is quite accurate and is dependable. However, the characteristic three or four hours of post-meal pain, relieved by eating or taking of alkalies, and the remission history, may be due to ulcer in the pyloric end of the stomach. The pain is variously described as burning, boring, lancinating, steady, and dull in character, and generally localized in the epigastric region or at the costal edge of the left side. It may extend posteriorly and even radiate into the back and chest. It has relation to meals, their size and quality, coming on at once or more or less late after them, the patient being less distressed when the stomach has been empty for some hours. Lesser types of pain (more on the distress order), quite classical in the time after meals, may be due to some gall-bladder condition or marked status of gastric hyperacidity. Another type of case that may closely simulate this syndrome, in which cramps are the feature in the pain or distress, is that due to chronic appendicitis where there is a reflex gastrospasm, pyloric in location, or a true pylorospasm.

Vomiting, which is supposed to be present in seventy per cent of gastric ulcer cases, is not present in duodenal ulcer. In gastric ulcer it is significant when it occurs with pain preceding it, the pain ceasing after the vomiting. In recent ulcers the vomitus consists of food slightly digested.

The posterior spinal tender area, first suggested by Boas, is frequently not found. Even when it is present it is found in so many neurotic individuals and pathological gall-bladder cases that its significance to Bassler is almost worthless.

Of the general symptoms less must be said. Whereas one patient will show anemia, weakness, and loss of weight, the next will be most robust. There are so many stomach and corporeal conditions that will cause these three, together with pyrosis, eructations of gas and fluid, and the other symptoms of indigestion, that these in themselves and alone are not important. The stomach is a very talkative organ, and

more times talks when the trouble is extragastric than when actual trouble occurs.

A sharply localized tenderness at or near the median line (left or right) is suggestive of the ulcer being in the pyloric region. In duodenal ulcer only about a third of the cases have tenderness on pressure over the duodenum, which when present is only on deep pressure and rarely sharp.

In ulcer of the anterior wall, lesser curvature, and duodenum, when the examination is made by a good roentgenologist, it may be most valuable in making or confirming a diagnosis. But most of the ulcers are at the posterior wall, and in these mistakes of omission or negative findings commonly occur. The most definite *x*-ray finding is an ulcer pit that retains barium or bismuth after the stomach is emptied. Since the commoner use of barium instead of the bismuth salts, this lodgment is less often seen than formerly.

The more indirect means of diagnosing ulcer, namely, tenderness on sharply localized pressure and hypermotility in duodenal ulcer, Bassler has discarded.

The factor of least importance in the diagnosis is such information as is obtainable from test-meal examination. In the clinical type of acute ulcers, when the characteristic onset of pain, vomiting and hematemesis are present, gastric analyses are not important for diagnosis. But the majority are not acute clinically and therefore should be examined by test meal. When done by an experienced person there is no danger in passing a tube, but the extraction should be by aspiration rather than by the expression method. The test-meal bottle method suggested by Bassler is useful and free from danger. Of course, soon after profuse hemorrhage it is unwise to use this method. When stomach contents have been carefully aspirated, the finding of importance is blood, next a high acidity, although these two are not conclusive, in fact may not even be suggestive. The retention of food elements over five or six hours is a finding suggestive of pyloric obstruction or obstruction not far from the pylorus. In duodenal ulcer when hypermotility exists, a smaller return than normal may be met with—that is, with an Ewald meal definitely less than 90 Cc. Where, by test-meal or *x*-ray method, or both, continuous secretion is diagnosed it points more definitely to ulcer than other conditions that may cause it. Fractional test-meal examination may be of more significance in diagnoses than the older methods, but even here many ulcers are met with that do not give characteristic acid plottings, and sometimes in characteristic curves no ulcer is present. The minimization of the value of the test method of examination is due to many cases of stomach ulcer having normal, low, or absent secretions; the interference of many factors, such as chronic gastritis, reflex causes, etc., and the fact that the stomach as an organ does not functionate the same way at all times.

Mention should be made of the string test, which Bassler has discarded. If the symptomatology points to ulcer, and the *x*-ray and laboratory are helpful, it is not required, because even a negative string, not an uncommon finding, would not exclude ulcer. It may be tried, but a positive string should never be sufficient to diagnose ulcer unless there is much more to substantiate it. When Bassler was using the string test frequently he got so many positive strings in pylorospasm, hypermotility, gall-bladder cases, and in normal stomachs that he discontinued its use.

To summarize, the history is of most importance, the *x*-ray next, the physical facts next, and the laboratory last of all.

About five per cent of all ulcers perforate. The acute cases are easy of diagnosis, although no pathognomonic symptoms exist. The onset is sudden, the pain and tenderness spontaneous, the pain spreading across the upper abdomen quickly. Deep breathing causes pain. At first the abdomen is flat, tense, and immobile; later on it distends, but still remains tense and immobile. The liver dulness (a late symptom) is absent in one-fourth, diminished in

one-half, and is not affected in the other fourth (this depends upon whether general peritonitis is present and to what extent). A friction rub may be heard, and Bassler has seen two cases in which gurgling of fluid and gas through the perforation was audible. Collapse and prostration soon ensue, the temperature, at first stationary, rises or becomes subnormal. The slower the onset of peritonitis, the higher is the temperature. The face becomes drawn and pale, the angles of the mouth depressed, and the expression anxious. At the end of the attack there is general distention of the abdomen, obliteration of liver dulness, vomiting, hiccoughing, cold skin, facies Hippocratica, small running pulse, unconsciousness, Cheyne-Stokes respiration, and death; and such is the terminal picture of a neglected case.

In the subacute cases the onset is less marked. The features here are history of ulcer, change in character of pulse, distinct intensification of pain, the onset of abdominal wall rigidity, a rise in temperature, and onset of a leucocytosis with septic index. It is in this type of case that diagnosis may not be made early. One must be always on guard for them, and frequent blood counts are most valuable in diagnosis. At the least suspicion, successive counts every few hours should be made, and however marked or obscure the symptoms of perforation, if the number of leucocytes keeps steadily rising and the neutrophiles relatively increase, and perhaps the eosinophiles coincidentally diminish or become absent, our duty to the patient is to insist upon immediate operation. In duodenal ulcers which perforate posteriorly and in which infiltration in the subperitoneal tissue does not take place, it is found that not only does the perforation take care of itself, but surprising as it seems, the ulcer heals without operation. It is better, however, for all patients with perforations to be operated upon, the subacute and chronic as well as the acute.

In the chronic case, definite diagnosis is rarely possible without the *x*-rays. There may be no local or general symptoms other than those due to ulcer, or those present are so vague that a diagnosis is not possible. As a rule these patients recover enough to get out of bed, and the extent of their complaining demands further examination, in which the *x*-ray or the surgeon makes the diagnosis.

In the differential diagnosis of ulcer we meet with such conditions as acute distress in the stomach due to indiscretion of diet (so-called gastralgia), cancer, hypersecretion, hemorrhagic and other forms of gastritis, pylorospasm, appendicitis, pregnancy with hyperemesis, uremia, gall-bladder pathologies, kidney stones, epigastric hernia, arteriosclerosis, spinal cord conditions, etc. By extensive work and processes of elimination, the conversant have no difficulty in diagnosing any of the ulcers. Important in the diagnosis of ulcer is that of postulcer conditions. In not a few of the cases as they come under observation, these are present and not infrequently they make the diagnosis of ulcer easier. Fortunately surgery has made marked inroads in clearing off a large proportion of these cases, but they are still with us and should be included in ulcer diagnosis.

Persistent excess of secretion can be taken as a postulcer condition, but it is always due to dynamic interference with the passage of food and thus is a condensation acidity. Therefore a stagnant stomach is best diagnosed by mixed test meals or the *x*-ray. There are some cases with persistent excess of secretion in which test meals and *x*-ray methods to diagnose dynamic obstruction fall down. They are few and an exploratory incision may be called for in these cases. In them, if no stomach lesion is met with, it often will be found in the gall-bladder, appendix, colon, or female pelvis. There is a persistent irritable type of stomach in which pain, more or less vomiting, and marked hyperesthesia lingers after an ulcer is supposed to be healed. When other stomach and general conditions can be ruled out, particularly neurological ones, we have to in-

clude them as sequelæ. Fortunately they are very rare and are diagnosed by exclusion.

RADICAL OPERATION FOR TERATOMA TESTIS.

HINMAN (*Surgery, Gynecology and Obstetrics,* May, 1919) reports five cases of operation for this malignant condition and contributes a most satisfactory study of the subject, observing that metastasis occurs in practically every case first and primarily in a limited zone of lumbar lymph-nodes which lie on the aorta for the left testicle and on the vena cava for the right, between the bifurcation of these vessels and the renal pedicle. Communication between these two groups and to deeper or more distant glands occurs only secondarily.

These were the author's conclusions in an article published in 1914:

"Involvement of these primary lymph-nodes may occur early or late, and the preoperative duration of the tumor in the testicle, its rapidity of growth, or its size, give no definite clinical indication of the onset or extent of such metastasis, but the probabilities increase the longer the duration and the more rapid the growth.

"The primary lymph-nodes are a very imperfect guard against secondary invasion; and metastasis to other gland areas by way of efferent lymph channels, or by blood-vessels to thoracic or abdominal organs, may occur early. Surgical treatment is of no avail after these secondary metastases have occurred. The only hope, therefore, in a radical operation is the removal of the testicle with its primary lymph area before the disease has spread beyond this zone.

"The experience of various surgeons in a total of 46 cases has demonstrated in suitable cases the feasibility and technical ease of the radical operation with a combined surgical mortality in all cases of only 11 per cent (3 deaths from pneumonia, 2 from peritonitis).

"Radical operation should never be undertaken when lumbar metastases are recognizable clinically, and is applicable only in the fairly early cases in which the disease is apparently limited. Owing to the deep position of the glands, these cases cannot always be differentiated before operation, so that every case, in which clinically there is no invasion, is suitable for radical treatment. The operation should never be performed until after the diagnosis is confirmed (by gross inspection after castration).

"Sufficient time has not elapsed and the cases are so scattered that it has not been possible to get the ultimate result in all of the patients treated radically. Forty-six per cent are alive: one for five years, one for four years, five for almost three years, two for over two years, and eleven for one year or less. There is a probable cure in at least four cases which had lumbar glands invaded with cancer at the time of the operation. Simple castration could not have benefited any of these cases, and their cure is directly attributable to the early and clean removal of the affected lymph area.

"Therefore, it may be stated that the early removal of the testicle with its primary lymph zone is the rational method of surgical treatment of teratoma testis; but the extensive nature of the operation and the fact that almost one-third of the cases thus treated were found to be inoperable warrant a very careful selection of suitable cases."

In the operation the author proposes first a simple castration through a high inguinal incision, the cord being dissected high and divided with the clamp and cautery. If the gross pathological inspection of the tumor confirms a diagnosis of teratoma the second step of the operation is immediately undertaken. The position of the patient is of much importance.

A medium-sized pad is placed under the opposite costal margin. The opposite leg is slightly flexed and the corresponding one kept straight so as to fit the hips in an oblique position. The patient should not be completely on his side but in a position half-way between the lateral and dorsal

ones. The usual kidney position is too extreme for satisfactory exposure. The arms should be folded in front of the patient and the sleeves pinned together to hold them in this position, and the shoulders should be more nearly up and down than the hips. The position is a bent dorsolateral one.

The incision is so extensive that certain nerve trunks supplying the abdominal muscles and skin areas over the hip, upper thigh, and pubic regions are almost always divided. Nevertheless by curving the incision so as to follow the course of the iliohypogastric and ilioinguinal nerves the larger and more important branches remain uninjured. The incision is extended from the high inguinal one, previously made over the external ring, to a point about 2 centimeters inside the anterior superior spine following the general direction of Poupart's ligament, and then is carried in a curved direction to about 1 centimeter below the tip of the twelfth rib, which it parallels for about half its length. The fascia of the external oblique is divided from the external ring in the course of its fibers, and from this point the muscle bundles may be split by blunt dissection as they follow closely the direction of the skin incision.

The peritoneum is stripped up from the vessels and all lymph nodes are removed, the ureter being dissected free and held aside. Hinman holds that both the spermatic vessels and the ureter tend to strip up with the peritoneum in this portion. The wound is treated by drainage.

Convalescence in the five cases reported was uneventful. The author believes that the mortality from this seemingly extensive operation should be little, if any, greater than that following castration. Chevassu reports that of 100 cases of new growths of the testis treated by castration 81 died and 19 recovered.

Coley is reported to the effect that his own series of cases showed that cancer of the testis treated by simple orchidectomy without any appreciable risk, and followed by a thorough course of treatment with the mixed toxins of erysipelas and prodigiosus (also without risk), has a far better prognosis than when cases were subjected to a very extensive laparotomy with removal of the lumbar glands.

SPOROTRICHOSIC ARTHRITIDES.

An editorial comment in the *Medical Record* of May 31, 1919, calls attention to the fact that in 1909, Beurmann, the leading authority on the sporotrichoses, announced the opinion that in virtue of the existence of osseous lesions of this origin joint lesions would also come to light. This prophecy was almost immediately realized in the report of three cases, and soon after several investigators reported the existence of sporotrichosic synovitis of various types. In one case both lesions coexisted in one subject. Aimes, in the *Gazette des Hôpitaux* of April 26, has collected notes of seven additional cases, and announces that in at least two the joint was implicated; or in other words, something more than the synovial membranes or sheaths was involved.

Briefly stated, this affection is one which ordinarily would pass for a tuberculous osteoarthritis, especially when it occurs as an isolated affection. As part of a general sporotrichosis it would be associated with subcutaneous gummata and ulcers, and perhaps bone lesions. Occurring only in one joint, the lesion would have to be termed primary.

Experience has shown that the diagnosis is more readily made in the multiple cases, while the primary cases have presented much difficulty. In such cases, indeed, no one would even think of sporotrichosis; and, in fact, one case is on record in which a leg with this lesion made such a bad impression that it was at once amputated; and other similar cases have no doubt existed. In the known case a sporotrichosic gumma appeared later and showed the error of diagnosis. The enlargement of the knee may be rapid or insidious. Several cases were typical "white swellings," with fistulæ. The knee is the joint involved in

the majority of cases. Another articulation mentioned is the sternoclavicular.

The practical importance in citing the sporotrichosic white swelling as a disease entity consists in the fact that a knowledge of it may enable the surgeon to save a limb now and then. The diagnosis is readily made by scrapings and culture, and the affection yields to iodine medication. The treatment is quite efficacious, but does not prevent prompt relapse *in situ* or in another joint.

TREATMENT OF FISTULA IN ANO, WITH HEMORRHOIDS.

Mayo, W. J. (*Minnesota Medicine,* June, 1919), in the course of a descriptive article of some of the hospitals of London, states that Edwards, in an interesting communication, credits Goodsall with most important observations regarding fistula in ano. Goodsall states that if a line were drawn transversely through the middle of the anus, all the fistulas lying anterior to that line would pass directly from the external skin opening to the internal opening inside the anal canal, and that all the fistulas posterior to that line would have their internal opening in the midline of the anal canal, posteriorly, no matter where or how many lateral openings (the so-called horseshoe fistulas) are present. In the anterior fistulas, therefore, the external opening will be found opposite the internal opening. An anterior horseshoe fistula, as Edwards remarks, is practically unknown. The cause of the curved or angular shape of the posterior fistulas, the external openings of which lie laterally and lead by a crooked passage to the internal opening posteriorly, is the arrangement of the coccygeal ligaments and muscle which protect the external tissues lying in the midline posteriorly and direct the pus laterally; the so-called horseshoe tracts and openings are thus formed. It is true that one sometimes meets with very superficial fistulas in which the internal and external openings are in the same line posteriorly, but in such instances the internal opening is external to the sphincter ani just under the mucosa.

The cure of the anterior fistula is quite simple. With the finger in the anal canal and the thumb outside, the induration of the fistulous tract may often be felt. A grooved director may be passed from the external to the internal opening. The tissues, including the muscle, are split through the fistulous tract, thoroughly curetted, and a small piece of iodoform gauze tucked in, so that the trough-shaped opening will be compelled to heal from the bottom. Occasionally Mayo has excised the fistula completely and stitched it up satisfactorily.

The treatment of the posterior fistula, which is the troublesome one, consists of carefully following the one or more external openings to the midline posteriorly, where the fistulous tract leading to the internal opening just above the external sphincter will be readily exposed. This is then split through, and the incisions made by following the lateral fistulous tracts are joined. After the use of the curette, if the fistulous tract contains much thick scar tissue, the posterior wall of the tract is split to let the blood supply come through. The tract is dressed, similarly to the more simple anterior fistulas, with a strip of gauze, which, however, must be replaced once or twice in the case of extensive fistulas to insure that no area of granulation tissue becomes buried. It is not necessary to cut the external sphincter more than at one point, and by no means should the mucous membrane of the rectum be split over the pockets lying above the internal opening. These pockets should be gently curetted and a little piece of gauze introduced: this may be removed in forty-eight hours, and no further packing need be used. If the mucous membrane covering these rectal pockets is split, it often leaves a very troublesome sensitiveness, due to the scar tissue.

Concerning hemorrhoids, Mayo observes that at King's College Hospital, in 1862, Henry Smith originated the clamp and

cautery treatment for hemorrhoids, a method Mayo has used in hundreds of suitable cases with the utmost satisfaction. It is more than twenty years since Mayo found out how to do the clamp and cautery operation properly by reading in the London *Lancet* an acrimonious discussion, carried on between Allingham and Smith. Allingham had misinterpreted the description of the clamp and cautery operation, and, after an experience with it as misinterpreted, he had condemned it. Smith denied being the criminal who had described the operation that Allingham had attributed to him; the only wonder to him was that Allingham had not killed more of his patients. Smith then explained why, in doing the hemorrhoid operation with the clamp and cautery, the pile should not be trimmed away with the scissors, because, if the eschar pulls apart, the cut artery, which is most resistant, will bleed as Allingham had described; the pile, Smith stated, should be slowly converted into an aseptic eschar, protected by the desiccated tissues, and the bacteria and the hemorrhoid destroyed at the same time. Smith described also how the veins pass downward anteriorly and laterally, so that it is seldom necessary to clamp more than in three places, and stated that there should be a half-inch of sound mucous tissue between each group of vessels destroyed by the cautery in order not to leave a possibility of stricture. Smith also called attention to the technique of stretching the anal muscles; they must be gently stretched and not lacerated or torn in the dilatation, and thus produce nerve injury and scar tissue deposit. The tube and the pack to lead off the gas are unnecessary; as a matter of fact, it had usually been introduced for fear of hemorrhage because the pile had been cut away before being cauterized, rather than for the object ordinarily ascribed to it. Attention was also called to the necessity of not using the clamp and cautery except in operating on internal piles; external piles and tags should be cut away and the skin defect sutured.

An excellent and most satisfactory laxative for use in cases of wounds and injuries about the rectum, such as those following operations, especially for hemorrhoids, was one prescribed by Van Buren in 1866. This is made up of equal parts of magnesium sulphate, magnesium carbonate, potassium bitartrate, and washed sulphur; two drachms as a dose.

SACRAL ANESTHESIA.

Syms (*Medical Record,* June 14, 1919) speaks enthusiastically of this method of producing anesthesia in the anal region, finding it efficient and safe. His method of procedure is that described by Thompson. The object is to introduce a hypodermic needle into the sacral canal, so one must familiarize himself with the anatomy of the sacrum, and with certain landmarks. The lower opening of the sacral canal is found at the hiatus sacralis. Of course, this is found a short but a variable distance above the upper end of the coccyx. If the coccyx is movable, it will be quite easy to locate its upper end and thus the lower end of the sacrum. If the two bones are ankylosed, it will not be so easy, but there is always an angle at the point of junction. Usually, the hiatus can be plainly palpated and recognized by the two prominent points which mark its sides.

After the needle is introduced, one can feel his way along the bone, especially if the needle is a little higher than, and a little superficial to, the hiatus, but parallel to the canal. By withdrawing the needle slowly and pressing its point against the bone, it will drop into the hiatus and can then be pushed into the canal. Of course, the needle must be introduced in a direction parallel with and posterior to the canal. In other words, it must be in the proper axis. The lower end of the canal is closed by dense fibrous membrane. One can usually feel the needle plunge through this membrane. After the membrane is penetrated the needle should not be introduced much further. Thompson has found that

the lower end of the dura is on an average 5.8 cm. from the hiatus; the shortest was 4 cm., the longest was 7 cm. The needle should be introduced detached from the syringe, so as to tell whether its point has entered the spinal canal or a blood-vessel. In either case injection should not be made. If blood flows it will show that the needle is in a vessel, probably a vein. If cerebrospinal fluid escapes, it will show that the needle has penetrated the dura. In either case the needle should be withdrawn sufficiently and then the injection be begun. If the needle is properly within the canal, there will be no resistance to the flow of the fluid. It will be as though one were injecting into space. If the needle is not in the canal, but is in the fascia outside the canal, there will be resistance felt to the flow of the fluid. Of course the skin and superficial tissues must be anesthetized before introducing the large needle.

Thirty Cc. of fluid should be employed. Three No. A tablets of novocaine in this amount make the proper strength. To this should be added 10 minims of a fifty-percent solution of calcium chloride. In other words, this is about 6 grains of novocaine to an ounce of fluid.

Anesthesia should be complete in the region of the anus in twenty minutes, and it will last two or three hours.

In this relation Meaker's communication (*British Medical Journal,* May 10, 1919) is of interest since he states that the method is, in so far as he knows, not in use anywhere in England. As to the anatomy involved, the dural sheath ends normally at the top of the second sacral segment. From this point downward the sacral and coccygeal nerves run free in the bony canal of the sacrum, surrounded by a little loose areolar tissue, until they make their exit at their respective foramina.

Of the posterior trunks, the first and second sacral supply the integument of the inner aspect of the leg and thigh respectively. The lower sacral and coccygeal branches are distributed to the anus, buttocks, perineum, and part of the skin of the male genitals. The individual distribution of these lower nerves is not accurately known.

The spinous process of the fifth sacral segment does not exist as a median protuberance, but as two unfused halves (the so-called cornua of the sacrum). The sacral cornua and the tip of the sacrum form an isosceles triangle, of which the apex is directed upward—the hiatus sacralis, which is the lower termination of the bony spinal canal. This gap is filled in by a dense fibrous membrane.

Since the sacrum is a rudimentary bone many variations from the normal are met in connection with the hiatus, of which the most important are the following: (1) It frequently replaces the spinous process of the fourth sacral segment as well as that of the fifth, and may run up as high as the second. (2) It is often found slightly to one side of the median line as marked by the anal cleft. (3) One cornu is frequently much more prominent than the other, as if the sacrum were slightly rotated on its long axis. (4) The hiatus is sometimes very narrow laterally, and (5) sometimes very shallow anteroposteriorly—that is, between the occluding membrane and the anterior aspect of the bony canal. In these last two conditions the technique of injection may present some difficulty.

The great majority of the writer's cases have been of this sort, and in such one may employ the method with a practical certainty of success provided the technique of injecting the sacral canal has been mastered. The extent to which the buttocks are involved varies considerably. In some cases the anesthesia is limited to a circle around the anus three or four inches in radius, while in others almost the whole of the buttocks may be analgesic. There is usually bilateral symmetry of effect. The lower rectum is anesthetized for at least three inches above the anus.

Cases have been noted in which the skin of the scrotum and penis was fully anesthetized. This is exceptional, and cannot be depended upon.